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REMOTE SYMPTOMS FROM LESIONS OF THE PROSTATE AND DEEP URETHRA

By Thomas McCrae, M.D., F.R.C.P.

Philadelphia

RECENT years have seen a marked increase in our knowledge of the surgical aspects of diseases of the prostate, seminal vesicles, and deep urethra, but appreciation of the medical aspects of these lesions has not been as keen. In diagnosis we have to remember always that the situation of symptoms and that of the causal lesion may be far apart. We all make errors through forgetting this and not least among them is neglect to consider disease of the prostate and adjacent structures as a possible cause for disturbance elsewhere and perhaps far removed. With symptoms suggesting disturbance in the urinary tract or in the sexual sphere, there is an immediate suggestion of local trouble and examination of the genito-urinary tract follows. In many cases there are no local symptoms which direct attention to the site of the lesion and it is to these that attention is directed in this article.

In the discussion of the remote effects of lesions of the prostate and deep urethra as they concern the problems of internal medicine, it is convenient to make a distinction between the organic and functional lesions. In using the word functional in this connexion, we must remember that functional disturbance of one organ may be due to organic disease elsewhere. In causing functional disturbances, alterations in the deep urethra and verumontanum are perhaps as important as prostatic disease, as they are more likely to cause disturbances in the sexual sphere and this in turn is often followed by what may be called neurasthenia. As regards the causation of organic disease the prostate and seminal vesicles are the more important, more particularly because the infected pros-

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tate or seminal vesicles may act as any other focus of infection. Any of the results of such a focus may follow, of which myocarditis and arthritis are possibly the most important. Such a condition may be regarded as "pelvic inflammatory disease" in the male and in many ways is as important as this condition in the other sex. In the causation of referred pain either the prostate or deep urethra may be responsible; in fact they are often associated.

In a previous communication* some of the phases of this subject were discussed and further experience has served to emphasize the importance and frequency of disturbances at a distance due to lesions of the prostate and deep urethra. When the disease gives definite local symptoms or signs referred to the genito-urinary tract, attention is directed there and the diagnosis should not be difficult. But in the patients in whom there is no suggestion of any local disease, we are likely to fix our attention on the features which seem essential from the patient's point of view and fail to recognize the source.

I should first like to draw attention to the frequency with which disturbance of the general nervous system in the male may be due to such local disease. The history of an illustrative case may help to bring out some of the points.

CASE 1. The patient, aged twenty-eight, single, held a responsible position in a large business. His employer stated that the patient had been losing in efficiency for sometime and that if this continued he would be compelled to discharge him, which he was much adverse to doing. The problem was to try and discover what was the cause of the inefficiency. The employer was confident that alcohol was not responsible, but had no suggestion as to any definite cause.

The patient himself was very frank and said that he did not know what was wrong, but felt that something serious was the matter. He realized that he was not doing his work as well as previously, he became more easily tired and found that in business interviews he did not have his usual keenness. He showed anxiety as a prominent feature. He gave an instance in a business trip to New York which he had taken the day before. On the journey over he dreaded the interview and felt convinced that he would make a mess of it. He was quite conscious of his lowered efficiency but completely puzzled as to any explanation for it. His condition had gradually grown worse and he had been much depressed at times. The history did not throw any special light on the condition, as he had been very healthy. There was no history of any thoracic or abdominal disease. He had used tobacco moderately but had never taken alcohol. There was no history of any venereal disease. His work has entailed heavy responsibility, but formerly he rather welcomed this and felt that he could handle any situation which would arise.

He did not know when he first began to notice that his efficiency was less, but certainly for a period of over a year he had not the usual grasp on his work and the same ability to do it well. He had slept well and had not lost weight. He had devoted the majority of his evenings to reading and study but the ability to concentrate had gradually diminished and now he was able to read for a short time only.

*MCCRAE, T., "The Remote Effects of Lesions of the Prostate and Deep Urethra." *Jour. Am. Med. Assn.*, 1913, lxi, 477.

This history did not suggest any clue as to the cause of his condition. Before seeing him I had thought that possibly the patient was in a position which was too big for him, that he had been going beyond his strength in trying to fulfil its demands, and worn himself out nervously. But the impression made by the patient did not bear this out and it was evident that there was some other cause. Naturally the possibility of a latent tuberculosis or of hyperthyroidism came to mind.

On examination the patient looked very well. There was considerable tremor of the eye-lids and tongue, and increase of the reflexes generally. There was no enlargement of the thyroid and the lungs and circulatory system seemed absolutely clear. It was only a routine examination which showed that there was enlargement of the prostate, which was decidedly tender, and inflammation of the deep urethra and verumontanum. There was no history of disturbance in the sexual sphere and at first I had some doubt as to how much part the local lesion played in causing the general condition. However, local measures were definitely indicated and treatment resulted in a marked change. Within three months the patient's condition was decidedly improved. At the present time (a year later) he is absolutely well and I have found on inquiry from his employer that he is quite back to his former efficiency.

You may well ask the why of this but it is not easy to answer. This patient had a general neurosis which had impaired his efficiency and was progressive. A local lesion was found and corrected with an immediate result. They may not be cause and effect but it is difficult to explain the situation in any other way. He had no treatment other than the local measures as I wished to see the result without any reason to attribute it to other means. If there is disturbance in the sexual sphere it is easy to understand the reason for a general neurosis, but in this patient so far as could be found this had not occurred.

It is interesting to speculate as to the reason for such general disturbance being due to a local lesion and one which seemingly gave no local disturbance. Must we regard such a patient as one with little resistance, one in whom any slight disturbance is enough to cause marked upsetting of the general nervous system? Is there perhaps an internal secretion from the prostate, alteration of which means widespread disturbance of glandular balance? Is it perhaps entirely a matter of a focus of infection? We must acknowledge our ignorance of the answer.

It is only necessary to refer to the difference which the recognition of lesions of the prostate and deep urethra has made in the management of the group sometimes termed sexual neurasthenics, to appreciate the importance of these local disturbances. These patients used to be the terror of every medical clinic, but we very rarely see them now, or at any rate only long enough to make a general study. They do not come back month after month with their accounts of symptoms to which too little attention was given. For this change the medical and neurological clinics owe deep gratitude to the genito-urinary surgeons. The importance of local

lesions in the ætiology of this group is well recognized but it is not well to expect that treatment of the local lesion will make a degenerate nervous system sound. In some of these patients the psychic disturbance is permanent and nothing can have much influence on it. In the majority of them some form of psychotherapy should go with local measures.

One feature which rather stands out in the symptoms of these patients with general nervous disturbance is the frequency and prominence of *anxiety*. This was manifested in the history already given and is particularly demonstrated in patients who have symptoms referred to the heart. These are varied in character and may change from time to time; palpitation, tachycardia, feelings of uneasiness and distress, perhaps even actual pain, may be present. In several patients the attacks of pain were so severe that the diagnosis of angina pectoris had been made. This is probably comparable to similar symptoms in the other sex associated with disturbance in the sexual sphere.

In every patient with symptoms of a general neurosis we all agree on the importance of determining the presence or absence of any local disease. Many such cases are really due to an early tuberculosis or hyperthyroidism, or a focal infection—for example in the mouth—may be responsible. The existence of prostatitis or infection of the seminal vesicles may be regarded as operating like any other focal infection and it may have an influence as such. However, there is probably something more in many cases but how this acts is difficult to explain.

Organic conditions resulting from prostatic disease. Of particular interest is the ætiological relation to myocarditis. In the causation of this the influence of infection is well recognized. Undoubtedly the source is the prostate in some cases. Evidently in an elderly man with arterio-sclerosis there are other factors, but the special importance of this particular lesion lies often in the decision as to operation. The prostate may be responsible as a focus of infection and because of its interference with proper urinary drainage keeping up an infection of the urinary tract. Operation may be advised against on account of the state of the heart and yet the removal of the prostate may be the only thing which offers hope of improving the cardiac condition. The problem as to how much part each factor plays is not easily answered, but the rapid improvement in the circulation after removal of the prostate is often striking. A somewhat similar problem may concern the kidney with prostatic obstruction and marked back pressure on the kidney, the clinical picture of which may suggest a chronic nephritis perhaps

with uræmia. It is essential to decide whether the condition is the end stage of a chronic nephritis or is the result of prostatic enlargement. The outlook depends often on a correct diagnosis. Proper treatment in the latter condition offers much but is not likely to be carried out unless there is a full realization of the part played by the prostate.

It is evident that as regards the circulatory system a focus of infection in the prostate or seminal vesicles may act exactly like a focus anywhere else. I have seen one patient in whom prostatic infection was apparently responsible for a phlebitis. The particulars are as follows:

Case 2. The patient, aged forty-eight, came complaining of phlebitis. In the past history there was a note of typhoid fever at the age of twenty, some attacks of influenza, but no other history of acute disease. There was an indefinite history of a sore, which possibly was syphilitic, twenty years before. He took treatment vigorously for a period of a year and a half. He had an attack of gonorrhœa at the age of twenty. He used alcohol moderately.

The phlebitis began in May, 1912, with pain and soreness in the calf of the left leg, which seemed to be deep seated and was worse on walking. There was slight fever for perhaps a week, but little if any swelling at this time. The condition improved with rest, but a short time afterwards he apparently had a severe illness, the exact details of which he did not know. He was in bed for four weeks and was told that he had high fever. Agglutination tests for typhoid and paratyphoid fever were negative. After six weeks he gradually improved and was able to get about. He then began to have pain in the femoral region of the left leg, with very definite signs of phlebitis. Shortly afterwards there was involvement of the right leg with swelling, considerable pain, but not much redness. This condition continued until the time when I saw him in October, 1912.

The patient was a very healthy, well nourished man, the temperature varied from 99° to 100°, the lungs were clear but the heart was slightly enlarged and somewhat irregular. The blood pressure was 130. The leucocytes were 14,000. The Wassermann reaction was negative. Both legs showed marked swelling with more in the left. There was a hard brawny œdema, such as one sees after phlebitis has continued for sometime. There was no special tenderness over the veins, which were somewhat but not extremely enlarged. On the inner surface of the left thigh there was an area of redness which suggested lymphangitis. The fact that the inflammatory condition in the veins was so persistent suggested some permanent source of infection. The ordinary examination did not show any local area which would be regarded as responsible, but examination of the prostate showed enlargement with some tenderness. The secretion contained a considerable number of pus cells. One seminal vesicle was enlarged and tender. As this seemed the only evident source of infection, persistent treatment was advised and the result of this was that the patient improved rapidly and steadily and became practically well. The phlebitis apparently subsided, the swelling in the legs disappeared and he was free from pain. I saw him again about four months after the first consultation and found his general condition excellent. There was very slight œdema of the legs after he had been walking or standing for some time, but this disappeared promptly with rest. The surface veins were slightly distended, but could not be described as varicose.

Six months later he reported that the condition was much the same and that he suffered very little from pain or disability. As he felt so much better he had given up the local treatment of the prostate and had resumed the use of alcohol, both against strong advice. After this the acute condition returned again, but not in such a severe form that the patient was compelled to give up and he persisted in keeping about and

would not resume the local treatment. No accurate notes were obtained as to the exact condition after this, but it was learned that he died suddenly some time afterwards apparently from embolism.

Remarks. Naturally it is not possible to be absolutely sure that the phlebitis was the result of the prostatic infection, but this was the only focus which could be found. The improvement in the phlebitis was marked with improvement in the local condition. When the latter was neglected and became worse the phlebitis returned. At any rate it seems a fair inference that the two were associated.

Arthritis. A large proportion of cases of arthritis are secondary to a focus of infection and in the male the prostate and seminal vesicles should not be overlooked in the search for this. In this connexion the seminal vesicles are particularly important. We may wonder that a local infection may be latent and not cause any local disturbance but there is a parallel condition in the teeth. A focus of infection at the root of a tooth may exist for years without any local symptoms. A considerable proportion of cases of arthritis of the spine appear to be secondary to prostatic and vesicle infection. In every patient with spondylitis pelvic infection should be carefully excluded.

Referred Pains. Of particular interest is the frequency with which referred pains occur secondary to these local lesions. It is not very rare for pain to be referred to the region of the kidney with features suggestive of renal colic and in a number of such cases a needless operation has been done. Young has directed particular attention to the importance of this point. There does not seem much excuse for mistake in these cases as the symptoms definitely direct attention to the urinary tract. It is very different, however, when the pains are referred to other regions and it may be said that no region from the waist down is necessarily spared. In a certain number of cases the pain is referred upwards and it felt particularly in the back or in the abdomen. An instance of this is as follows:

Case 3. The patient, aged twenty-five, was seen in consultation with Dr. M. Green. He complained of pain in the back and abdomen, the latter being particularly on the right side. As two of his near relations had died of renal tuberculosis he thought that this was the explanation of his symptoms. The past history was comparatively negative. He had not had any severe acute infection and, except for an operation for appendicitis three years before, had always been well. There was no history of any venereal infection and he had not used alcohol.

The present illness dated back about six months. At first he complained of pain in the lower back, which was not severe and in the early stages was felt irregularly with intervals of a week or longer between. After two or three months the pain in the back became more constant and he began to suffer from pain in the right abdomen. This soon became more or less constant, was generally worse in the afternoon and

had no apparent association with any activity or fatigue. He was quite comfortable if he was lying down and had no discomfort in the morning until he got up. The pain never waked him at night When asked to indicate the points of most severe pain he pointed to the sacrum and to the lower right quadrant of the abdomen. His general health had suffered as he was rarely free of some pain and was always worried about it. The patient volunteered the information that his nervous system was considerably affected and that he felt much less able to do his work.

The general examination showed very little abnormal, the pupils were widely dilated, the reflexes were increased and there was marked dermatographia. The heart and lungs were clear. There was tenderness on palpation in the right side of the abdomen, apparently due to the cæcum being distended. Examination of the back did not show anything abnormal, the movements were perfectly free, and there was nothing to suggest spondylitis. Examination of the prostate showed that it was considerably enlarged and markedly tender, with the seminal vesicles also involved, one beng considerably enlarged and very tender. There was distinct tenderness on pressure over the deep urethra. A further examination showed that the verumontanum was inflamed and extremely tender. A point of some importance was that after rectal examination and pressure on the prostate the patient suddenly cried out that the severe pain in the region of the sacrum had returned, no doubt due to the examination. There was no question of the genuine character of the pain.

Remarks. It is evident that in such a case as this we cannot hope to carry out any proper therapy until a diagnosis is made of the cause. This patient had consulted many physicians and had been given various diagnoses, in which of course "rheumatism" figured often. The giving of sedative drugs had resulted in some temporary relief but did nothing more than this. The patient made no complaint of any symptoms that would direct attention to the local trouble, and there was nothing to suggest disturbance in the urinary system or sexual sphere. Such a case emphasizes the importance of knowing what a variety of pains may result from prostatic disease and also the wisdom of a routine examination.

The areas to which pain may be referred are many. Pain in the back is not infrequent, especially in the lumbar region. As is true of the majority of these referred pains it is usually much more marked on one side than the other and the distribution is rarely symmetrical. The symptoms may suggest the possibility of spondylitis. This uneven distribution is also true of pain referred to the abdomen which sometimes suggests visceral disease there. In the previous article a case was reported in which very severe paroxysms of abdominal pain, from which the patient suffered, could be brought on by touching the inflamed verumontanum through the urethroscope. In other cases the pain is referred to the greater trochanter, to the sacro-iliac joint or to the sacrum. Occasionally the site is the rectum, the pain being described as apparently situated about the middle of the rectum. Particular importance should be given to pain referred to the sciatic nerve. There are many causes for "sciatica" and the ætiological diagnosis

is often a matter of difficulty. The possibility of the prostate being responsible should always be considered. It is usually easy to prove or disprove this. In a patient with sciatica seen recently there was disease of the sacro-iliac joint and chronic prostatitis. The question arose as to which was responsible. Fixation of the joint resulted in a rapid improvement in the sciatica, the prostate was not responsible.

There is no desire to suggest that every obscure pain "below the belt" in the male is due to "pelvic disease". But it is important to emphasize that a certain number of them come from this cause and that unless it is known and looked for, a definite ætiological diagnosis is not likely. To put a man to bed who has sciatica is good therapeutics up to a certain point, but it is poor treatment if a cause which can be corrected is left alone.

Another result of prostatic and seminal vesicle infection is fibrositis. This is responsible for many of the obscure and persistent pains often designated rheumatism or neuritis. In these cases the symptoms are the result of a local focus of infection.

In this article no reference is made to the usual symptoms and signs of prostatic, seminal vesicle and deep urethral disease. These are well known. It is on the need of search in what may be called latent cases, in so far as local symptoms are concerned, that emphasis is placed. The diagnosis is easy if a proper examination is made. A rectal examination is usually enough to determine the presence of disease of the prostate and seminal vesicles. The use of the urethroscope may be required to decide as to disease of the deep urethra and verumontanum. One point in reference to the ætiology of these infections may be noted. They are not necessarily the result of a gonococcus infection. Many of the profession have the idea that a negative history as concerns gonorrhœa excludes the possibility of prostatic infection. This is not the case and in many cases the infection is probably from the blood or urine. Acute prostatitis may occur with an acute infectious disease and become chronic. A variety of organisms may be concerned. Another erroneous idea is that prostatic disease does not occur except in advanced life; it is well to realize that its occurrence in young adults is not uncommon.

The chief duties of a consultant were described, by one who is himself a celebrated consultant, as two, viz.: "To give as cheerful a prognosis as the circumstances of the case permit and, second, to make a rectal examination." The importance and frequency of prostatic disease as a cause of obscure symptoms renders the second duty an especially important one.

DIAGNOSIS OF TUMOURS IN THE UPPER ZONE OF THE ABDOMEN

By Alexander McPhedran, M.D.

THE term tumour is used to designate any kind of abnormal mass and also any normal structure in an abnormal position.

In the examination of the upper zone, it is of the utmost moment that the patient lie in a comfortable position, squarely on the back, with shoulders raised on one or two pillows, and directly facing a good light, so that nothing abnormal escapes the eye. Inspection should then be made first, while the patient lies at rest, and after that, while deep inspirations are made in order to show any signs of masses moving beneath the abdominal wall, especially of such as may lie under cover of the costal structures and are forced downwards in deep breathing. The want of observance of these simple rules has misled the most capable physicians.

In the left flank the great majority of tumours are connected with either the left kidney or the spleen. The normal *kidney* is frequently prolapsed, occasionally it is wandering and movable over a wide area in the abdominal cavity. If it is simply prolapsed, it lies on the posterior wall of the flank, and on light pressure it disappears with distinct "slip" into its normal position. The wandering kidney usually is also easily replaced. The enlarged kidney lies on the posterior wall of the flank, filling it from the outer wall to the spinal column, and, if not adherent, can be lifted forwards on the points of the fingers. If not much enlarged, it may be pushed up into its normal position. As it enlarges, the flank posteriorly and laterally becomes filled out and rounded, but never bulging. If the flank bulges, it is due to a new growth or an abscess. As the kidney enlarges, it comes nearer the anterior abdominal wall and into contact with it at or above the umbilical horizontal line. The colon is in front of the outer part. It is often reported to be in front of the inner part of the kidney and passing outwards to the outer part as it descends. By pressure with the fingers obliquely, the anterior wall of the colon can be felt in some cases to rub over the posterior.

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If the mass is not too large, the small bowel may lie in front of it. It may descend in inspiration, but much less so than do organs which are in contact with the diaphragm. The kidney mass always retains its normal shape. It may cause varicocele from pressure on the vessels in the posterior part of the abdomen.

The *spleen* may also be wandering and found in various parts of the abdomen. When it enlarges, it descends in close contact with the abdominal wall, carrying the splenic flexure of the colon ahead of it, and as its size increases, it moves the colon further and further inwards towards the middle line. The position of the colon in relationship to either the kidney or spleen is best determined by its inflation with air, the distension of the colon being followed upwards by the aid of the stethoscope. The enlarged spleen fills the flank outwardly and may fill it posteriorly also, but only in the external part, not extending inwards to the spine, but leaving a space into which the fingers may be dipped with gentle pressure and which is also more or less resonant to percussion. The exceptions to this rule, if they occur, are rare. The spleen moves freely in respiration. Its outline is definite, its margin being firm, unless it is of rapid growth, when it may be somewhat soft. If the abdominal wall is relaxed and thin, the fingers may be pressed underneath its lower end. One or two notches may be felt in its inner margin, but in many cases they are not to be found. It never causes varicocele.

Case 1. A young man entered into the hospital in 1916, owing to weakness and loss of weight. He was very pale and in his left flank there was a moderate sized tumour, filling the outer part and the posterior part externally. It moved freely in respiration and in front descended about two inches below the costal margin. Its shape was very irregular and the increase in size appeared to be due to the formation of masses in its substance. Between its posterior inner margin and the spine there was a well-defined space that was soft, contained no mass and was slightly tympanitic on percussion.

This is a good illustration of the difference between a renal mass and that formed by the spleen.

Case 2. A boy aged thirteen seen some years ago had had hæmaturia for some time. He was pale, moderately œdematous and showed a definite fullness in the left flank in all directions, due to a firm mass filling the flank anteriorly, laterally, and posteriorly. There seemed no room to doubt the presence of a large renal tumour. An operation was advised.

The surgeons who saw him, believed the tumour to be an enlarged spleen. The mass was found to consist of the spleen lying on a large kidney. Inflation of the colon would have proved

the existence of the spleen and the firm mass filling the whole flank inwards to the spine should have made the existence of a large kidney all but certain. In the right flank, the kidney is to be differentiated from an abnormal process of the liver. Occasionally an enlarged gall-bladder with a long pedicle falls into the right flank. What has been said of the left kidney applies also to the right—it lies on the posterior wall of the flank extending from the outer wall to the spine, with the colon in front. If not too large, it can be made to disappear behind the liver with light pressure. A liver process lies against the other flank, outside the colon, and does not fill the flank posteriorly, and usually the kidney can be felt to descend in inspiration behind the liver. A liver process can usually be traced upwards and found continuous with the liver. With care, error in the diagnosis between the two should rarely occur, if careful examination has been made. That error may occur is shown by the following:

CASE 3. A young woman, pregnant five months, was suffering from grave septic poisoning, with some pyuria; a tumour in the right flank was regarded as an enlarged septic kidney; an operation for its removal was proposed. On careful examination, however, it was pointed out that the tumour was continuous with the liver, that the colon was inside of it and that the kidney could be found descending in the posterior flank in inspiration. An operation was done and the conditions were found as above described.

In some cases rotation of the liver causes its right extremity to appear in the right flank. Such a condition was found in an infant with acute abdominal symptoms, thought to be due probably to an appenditicis. The appendix was found healthy, but there was blood-stained serum in the peritoneal cavity, which was thought to arise from hæmorrhagic pancreatitis. Such was proved to be the case at autopsy.

Tongue-lobes of the liver may project from any part of its lower border or under surface. They vary greatly in shape and size; usually they are broad and short, sometimes narrow and very long. If they are continuous with the margin of the liver, they are usually recognized with ease, if we are on our guard; but if there is a deep groove at their junction with the liver, or if they project from its under concave surface, it may be impossible to differentiate them from an enlarged gall bladder, an hydatid cyst or new growth adherent to the liver. In rare cases, larger or smaller parts of the liver are met with, which are almost completely cut off from the main body, apparently from long-continued pressure of the corset or of a constricting band. The mass may be so freely movable as to elude detection on examination.

Nodules in cirrhosis of the liver are occasionally quite easily felt at or below the costal margin. There may be difficulty in distinguishing them from carcinomatous nodules. Sir William Jenner said they were never larger than a cherry. Cancerous nodules are usually larger when discovered and some of them found umbilicated.

Of tumours of the liver the most frequent is carcinoma. There is generally enlargement of the liver and some hardening. They often grow very rapidly and the liver may become enormously enlarged. Nodules if they appear may be umbilicated. Pain in front and back is common. Jaundice occurs in about half the cases, is marked and continues to increase, the skin becoming a dirty green hue. Ascites is frequent.

Syphilis may cause gummas in the liver; they sometimes attain a large size. Surrounding them is a more or less extensive formation of fibrous tissue. If a gumma softens and is absorbed, the fibrous tissue contracts, causing a depressed scar, and the surrounding liver undergoes compensatory hypertrophy, and therefore becomes more prominent, and thus the scar depression will simulate an umbilication; at the same time the liver may be the seat of lardaceous deposit, causing it to enlarge as greatly, but not as rapidly as a cancerous liver. In rare cases there is also jaundice from obstruction but it never becomes the dirty-green hue of cancer.

Tumours of the pancreas may form in any part of the gland. The most common is carcinoma of the head of pancreas. Chronic inflammation may cause a mass indistinguishable from cancer of the head of the gland. Cyst is more common than a solid tumour; it often results from acute pancreatitis. In some cases the foramen of Winslow becomes closed and an accumulation of serous fluid in the lesser peritoneal cavity may occur and form a cyst indistinguishable from one of the pancreas. The relation of the stomach and transverse colon to a pancreatic cyst varies: (1) The cyst may project above the stomach; (2) The stomach may lie in front, the colon being below; (3) The stomach usually lies above and the colon below the cyst; (4) The colon may lie in front; and, (5) Both stomach and colon may lie above, the cyst projecting forwards and downwards, appearing at or below the umbilicus.

Case 4. The following illustration may be given: A man of fifty years had an acute pancreatitis, with the usual symptoms of the sudden onset of pain in the epigastrium, followed by vomiting and collapse. Recovery took place in a few days. Some weeks later, swelling began in the epigastrium and increased so that in a few weeks it greatly distended the abdomen. It was supposed to be a cyst of the pancreas; in operation accumulation of serum in the peritoneal cavity was found and at the bottom

of the cavity round smooth nodules were found, and were regarded as probably cancerous. Recovery quickly followed and the man resumed his business. Swelling of the epigastrium recurred and increased to a very large size, again necessitating operation. This time the cyst was no doubt pancreatic, the contents being similar to the secretion of the gland. The fluid discharged freely for many months and kept the surface around the sinus constantly raw. The cyst gradually contracted and in time the sinus closed, with recovery. In this case the stomach was above, the colon below the cyst.

In a case recently seen with Dr. F. N. G. Starr, a very large cyst-like mass occupied the upper abdomen down to the umbilicus, extending on each side to the mid-clavicular line, and prominent anteriorly. It appeared to be a cyst of the pancreas or serous distension of the lesser peritoneal cavity, although it extended laterally rather much for either. On exposure, it presented a tense dark, mottled mass and proved to be a hypernephroma growing from a suprarenal "rest" in the falciform ligament of the liver.

Gastric tumours are most frequently pyloric. They are usually small and firm. In the early stages before adhesions occur they are freely movable, sometimes over a wide area in the abdomen. The gastric peristalsis may be so active that the mass may be felt apparently to harden under the hand. This is probably due to tension at the end of the stomach, rather than a hardening of the tumour. In such cases the tumour is usually non-malignant, although cancer may have begun to form in it. Tumours may form in any part of the stomach. They can usually be demonstrated by inflation, or better by *x*-ray examination, to be in connexion with it.

Tumours formed by the gall bladder are usually readily diagnosed—they are fixed to the liver, move with it, are usually separated from it by a groove, are movable laterally in most cases and abdominal tympany is below them. An hydatid cyst closely resembles the gall bladder, but is it usually immovable, being firmly adherent to the liver, grows slowly without symptoms, being accidentally discovered when it attains a large size. It is smooth and painless. It may form in the position of the gall bladder. It is usually single, but there may be two or more. I saw a woman in a London hospital in whose abdomen there were a great number of smooth, rounded, adherent, painless hydatid masses. She required tapping from time to time for the removal of copious ascitic effusion.

Retraction of thickened omentum occurs in some cases of tuberculous peritonitis. The nodular mass extends across the epigastrium, is fixed by adhesions and may resemble a nodular lower border of the liver. A tympanitic space is usually found between it and the liver and serves to prevent the error.

Fæcal masses in the flexures of the colon and in the transverse colon may be misleading; a copious enema usually removes them. Tumour of the colon or a polypus in its cavity are occasionally met with. There will be some blood and mucous in the stools from time to time indicating the seat of trouble. Inflation may determine the relationship of the tumour to the colon and settle the difficulty.

Aneurism of the aorta or one of its branches sometimes occurs. Aneurism of the aorta forms an oval or round tumour, which can be grasped and felt to pulsate in all directions. Aneurism of the hepatic artery is very rare; most frequent in males. It may be due to infection of its wall from without. As in aneurisms elsewhere, syphilis may probably be the most common cause. It has never been made out during life except in laparotomy. Its chief symptoms are pain, hæmorrhage and jaundice, but these occur also in ulcer of the stomach and duodenum, and pain and jaundice in biliary colic. If all these can be excluded, aneurism may be suspected.

At a special meeting of the Council of Physicians and Surgeons of New Brunswick, held in St. John on the twenty-second of March, the resignation of Stewart Skinner, M.B., as registrar of the Council was accepted. Dr. Skinner is leaving for overseas. John S. Bentley, M.D., of St. John, was elected as Dr. Skinner's successor.

THE ACUTE ABDOMEN

By F. N. G. Starr, M.B. (Tor.)

Associate Professor of Clinical Surgery, University of Toronto

" Whatsoever thy hand findeth to do, do it with thy might"—
but let it be mighty gentle!

SO often I have been asked why, just before opening the abdomen, I make a careful palpation, that it occurred to me it might be interesting to take as "my text", The Acute Abdomen, for it is in such cases that preliminary palpation under anæsthesia is of so much value.

If one accustoms oneself to an examination of the flaccid abdomen under anæsthesia, he will be astonished at the valuable information he will secure as a guide often to future conduct. Take for example our ever constant friend, the acute appendix. Some surgeons use as a routine, the near midline incision, some the right rectus incision, and some the McBurney-McArthur, or split muscle incision. It frequently occurs that under the anæsthetic one can locate accurately where the acutely inflamed appendix lies; hence, why, if the appendix happens to be out near the anterior superior spine, make a near midline or a right rectus incision and drag an inflamed and perhaps perforated appendix across an otherwise clean part of the peritoneal cavity? Or if it happens to be near the midline, why make a split muscle incision? Or, in the case of an undescended cæcum with a retrocæcal appendix, why approach it with the so-called McBurney's point as an objective rather than the appendix itself? If you try this you will be surprised to find how difficult it will be to get into an operation rut—and what is worse than a surgical rut?

The principal surgical conditions giving rise to the acute abdomen that occur to one's mind are:

Acute appendicitis.
Peritonitis from ruptured pyosalpinx.
Acute obstruction.

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Acute obstruction supervening upon a chronic condition.
Intussusception.
Acute cholecystitis.
Perforated duodenal and gastric ulcers.
Perforation in typhoid.
Acute pancreatitis.
Ruptured ectopic pregnancy.
Ovarian cyst with a twisted pedicle.

I am purposely leaving out of the discussion traumas of the abdomen, as such would make a paper in itself, and we might be led to an acrimonious discussion of surgical trauma.

It is hardly necessary to take up time with a discussion on the diagnosis of *acute appendicitis*, and yet a few weeks ago a man struggled to my consulting room complaining of pain beginning in the left loin and radiating down to the left inguinal region, with pain in the left testis associated with frequency of micturition, upon whom his family physician and a so-called surgeon desired to operate for acute appendicitis!

Peritonitis from ruptured pyosalpinx begins with a gradually increasing pain referred to the umbilicus, with marked tenderness and rigidity in the lower abdomen. There is a history of some previous attack associated with a vaginal discharge; often a delayed convalescence from pregnancy or following a miscarriage. A bimanual examination reveals a mass in one or both broad ligaments. There is a greatly increased leucocyte count—I have seen it as high as 48,000. Upon several occasions when I have been called to operate upon an acute appendicitis, and have had no opportunity to make a careful preliminary examination because of an apparent need for haste, I have as a result of a careful preliminary palpation under the anæsthetic been led to make a near midline incision and thus have been saved the necessity of *explaining* why it was necessary to make two incisions "to save the patient's life!"

Acute obstruction frequently mainfests itself first of all by nausea, and later with vomiting, with more or less pain and this usually paroxysmal in character. The patient is sure he has colic. An enema is given for relief and neither gas nor fæces follow the administration, while the vomiting becomes more frequent and early gives an offensive odour. One may be morally certain of an acute obstruction from some cause. If one can detect visible peristalsis, it is additional convincing proof of the condition. In such cases of acute obstruction—when one cannot resort to the

use of the *x*-ray without hazarding the patient's life—one may frequently get an accurate clue to the site of obstruction by a careful palpation of the abdomen under anæsthesia, not necessarily by feeling the obstruction, but by being able accurately to outline a coil of especially tense bowel just above the obstructing point. This is particularly true in internal hernia,[1] where a loop of bowl has passed through a narrow opening.

In *acute obstruction supervening upon a chronic condition*, one has a history of a gradually increasing constipation. The symptoms of acute obstruction occur, but the patient, having developed a certain amount of tolerance to the toxæmia, takes longer to become critically ill, hence an opaque meal followed by an *x*-ray examination may assist one in arriving accurately at a diagnosis. Palpation under an anæsthetic will sometimes lead one to the obstructing induration, if one has failed to locate it previously.

Intussusception[2] usually occurs in an infant or young child. It is ushered in with a sudden cry, followed by vomiting. Then attacks of paroxysmal pain supervene. An enema brings away no gas or fæces except from the lower bowel, but there is sooner or later straining with bloody mucous in the stool. As a rule the abdomen remains flaccid except during a paroxysm, and one may readily outline a sausage shaped swelling within the abdomen, usually upon the right side.

In *acute cholecystitis* there is frequently so much rigidity in the upper abdomen that, while one may be morally certain of the diagnosis, yet he is permitted a sigh of relief when he palpates the abdomen under anæsthesia and makes out readily the fundus of the gall bladder, and is able to differentiate the liver margin. On two occasions I have been called hurriedly to operate upon an acute gall bladder. The pain was under the right costal arch, there was tenderness and rigidity in the upper right rectus. When the patient was under the anæsthetic one could feel some distended tense coils of intestine, but no enlargement suggesting a distended gall bladder. This led to a careful reëxamination of the inguinal canals. On the right side one could feel a small kernel-like lump which had not been observed in the previous examination. I opened the inguinal canal and found a strangulated hernia, the relief of which gave complete relief to the patient's symptoms and saved a futile operation upon an innocent gall bladder.

Perforated duodenal and gastric ulcers seldom give rise to much difficulty in the diagnosis. There is a history of "indigestion" with acidity; hunger pain coming on two or more hours after meals,

relieved by eating. Then comes the sudden pain accompanied by shock and sweating. I remember, however, that on one occasion I made a hurried call to the country to see a case with such a history. The pain was referred to the left costal margin, and there was rigidity in the upper left rectus with evidence of fluid in the flanks. I did not observe in the candle light of the bedroom that there was marked pallor. When, however, she was brought to the improvised operating table where we had a very good light from several lamps, I did, and in consequence made a pelvic examination, and found a mass in the left broad ligament, opened in the lower abdomen instead of the upper, and cleared up a ruptured ectopic pregnancy. It is well therefore to keep such a possibility in mind. In perforated ulcer the recognition of free fluid in the flanks is a helpful sign and may be elicited by placing one hand in the flank and gently percussing or flicking the abdomen as described by Professor McPhedran[3] several years ago.

In the last five cases of perforated duodenal ulcer a palpation under anæsthesia has led me to continue my incision downward so that I might the more readily explore the appendix, and in all five of these cases I have found *an acutely inflamed appendix associated with a kink of the lower ileum.* In one instance the appendix was on the point of perforating. The appendix in each case was removed and the ileal kink divided, and then the duodenal perforation which had been carefully packed off was dealt with. The recovery in these cases was so rapid, as to be spectacular. I am inclined to think that some former cases suffered more, and had a more prolonged and eventful convalescence because of an associated appendicitis. One cannot help wondering if there is any relationship between cause and effect.

While on the subject of perforated duodenal ulcer, I must relate a peculiar incident that occurred several years ago. On three successive days I had three cases of perforated duodenal ulcer sent into the hospital by the same physician. When he 'phoned me, I asked "What is the matter?", and he replied, "I don't know, but he is very ill—see him as soon as you can." This surely is a much greater appreciation of one's duty to his patient than that of the family physician and a consulting physician, who took ten days to make a diagnosis of intestinal obstruction, and then growled at the inefficiency of the surgeon who was called in to perform—not an operation—but a miracle!

Perforation of the bowel in typhoid frequently presents great difficulty in diagnosis. The patient is already so ill that his sen-

sibilities are dulled and he may not react readily to altered conditions. If I were asked to mention the one most constant sign of perforation, I think I should pin my faith to a diminution or complete absence of liver dulness. There may be pain at first but this is quickly relieved by nature pouring out serum and lymph. Then there is shock, and a gradual increase in the fixation of the abdomen with costal breathing. At first, a sudden drop in the temperature with an increase in the pulse rate, just as in hæmorrhage, may call one's attention to some alteration in the patient's condition and thus put one on his guard.

I have operated upon seven cases of perforation of the bowel in typhoid fever with six recoveries! The case that died succumbed from double pneumonia six days after the operation. At autopsy the perforations were found closed and the peritoneum clear. You say I must have got the cases early. If I did it was my fault for I did not wait for ante-mortem signs of an impending autopsy, such as one finds described in text-books dealing with the subject. One must realize that these patients before perforation are already desperately ill from the disease. In dealing with them surgically, no time must be lost in deciding when to operate, nor must any time be wasted during the operation, nor must the bowels be mauled about, looking for perforations! *The coil of bowel that perforates is already much thickened* from the ulcerative process, and when the abdomen is relaxed under the anæsthetic this thickened coil can readily be felt through the abdominal wall. The patient's emaciated condition facilitates greatly in this observation. Then make the incision over that part of the abdomen, and the perforated coil will present at the opening. All that is required is a purse-string of chromic gut about the perforation or perforations. The coil is dropped back, drainage provided, and some silk worm gut closes the wound sufficiently. The entire procedure should occupy from five to twelve minutes. If these cases require evisceration, or if great handfuls of bowel require to be hauled out of the abdomen, far better would it be, both for the credit of surgery and for the sake of humanity, that the "perforated typhoid" be left to die peacefully under the beneficent influence of morphine than to be *mauled* to death on the operating table.

Acute pancreatitis presents many difficulties. The most characteristic symptoms are intense pain with marked evidence of shock, associated with an expression of fear upon the countenance. Even with the relief of pain there continues marked prostration. An examination of the stools for fat, and the urine for Cammidge's crystals may confirm a provisional diagnosis.

An overian cyst with a twisted pedicle, if the torsion is complete, is intensely painful, and the lump that usually can be felt above the pubes gradually increases in size unless the strangulation is relieved. One very suggestive thing that has frequently struck me about these cases is the great amount of sedative required to relieve the pain. While it may take away the sharp edge, the patient is still conscious of some discomfort. When the cyst is small, on the right side, and is still intrapelvic it may readily be mistaken for an acutely inflamed appendix. Here again palpation under anæsthesia will materially assist one in arriving at a more accurate decision and in directing the steps of the operation with less discomfort to the surgeon.

In closing, I wish once more to commend to you "palpation under anæsthesia". It will assist the intelligent surgeon and be helpful to the unsuspecting and sometimes the over-confident patient.

References:

1. "Internal Hernia," F. N. G. Starr, *Canadian Journal of Medicine and Surgery* July, 1909.
2. "Intussusception," F. N. G. Starr, *Canadian Practitioner and Review*, 1910.
3. "The Physical Signs of Exudate in the Peritoneal Cavity," A. McPhedran, Canadian Medical Association Journal, vol. i, 1911.

The annual meeting of Alienists and Neurologists will be held Monday, July 9th, to Thursday, July 12th, 1917, in the Red Room, LaSalle Hotel, Chicago, under the auspices of the Chicago Medical Society. Dr. George A. Zeller will act as chairman. The programme will be mailed June 28th, with abstract of each paper, and contributions to the programme are solicited. There is no membership fee. The address of the Secretary is, Room 1218, No. 30 Michigan Avenue, Chicago.

NITROUS OXIDE-OXYGEN ANALGESIA AND ANÆSTHESIA IN OBSTETRICS

By Gordon G. Copeland, B.A., M.B.

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THE subject of this preliminary paper on nitrous oxide-oxygen analgesia and anæsthesia in obstetrics has more than an academic interest to our profession, in that these gases, properly used, conserve human life at its two most critical periods. My excuse for urging the use of a comparatively new and expensive method for the relief of pain in childbirth is found in its great safety, wide range of application, and life saving features. In the midst of this awful war, the conservation of infant life and adult female health is, I claim without fear of contradiction, of vital importance.

From the dawn of history, attempts have been made to mitigate the pains of labour. The necessity for relief in the majority of parturitions is urgent, especially among women in a high state of civilization as it exists to-day. The pain of labour is as real, and, unless relieved, its disastrous effects are as far reaching on the subsequent health of the mother, as pain of equal intensity from any other source. Among high-strung nervous women, in cities particularly, labour is frequently pathological. They are not sufficiently supplied by nature with those factors which enable women in savage states and of strong muscular development to deliver themselves without much trouble.

Lately, thanks to a widespread discussion in the press, the merits of various methods used to aid and relieve childbirth have been re-investigated. Much careful work has been done here in Toronto by Drs. McIlwraith, Watson, Kinnear, Gallie, Scott, myself, and others in the subject of morphine hyocine amnesia and analgesia. We have come to almost the same conclusions as other investigators, that in expert hands in selected cases under almost ideal surroundings, twilight sleep, especially in the first

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stages of labours which are long and painful, protects the mother from shock and exhaustion, relieves spasm, and does not apparently harm the baby. But we have also found that even if given correctly, this method frequently either fails adequately to protect the mother towards the end of the second stage, owing to the fact that the patient is not then under the influence of morphia, or if she is, the life of the baby is seriously imperilled. Coöperation on the part of the patient is almost absent and asepsis is difficult to control. The method is not suitable if the labour is likely to terminate within three hours. It fails partially or completely in about 20 per cent. of cases. To protect the woman fully it is generally necessary to give one of the inhalation anæsthetics at the perineal stage. In its proper place, morphine and hyocine analgesia is one of the most valuable agents we have, and I personally use it where indicated. My paper is not intended to decry the proper use of twilight sleep, but to present to you a method which is applicable to nearly all cases who can afford to pay for it.

Although one of the first inhalation anæsthetics to be discovered and its use suggested, nitrous oxide has not, until lately, come into the wide sphere of usefulness it deserves, owing to the difficulties connected with its purification, storage, and sale, and the lack of efficient machines to handle with ease and safety, gases under great pressures.

For a woman having a normal easy labour, and possessing intact liver and kidneys, needing only the keen edge taken off the perineal stage, all things being considered, I fail to see that we have anything much superior to chloroform or ether. I shall therefore exclude this fortunate class from my discussion.

Let me then discuss nitrous oxide-oxygen analgesia given with the use of a good machine. I have given these gases intermittently in the various stages of labour for periods up to five hours. Given correctly, they afford almost complete relief from pain, delay exhaustion, protect from shock, and do no appreciable damage to mother or babe in the first stage of labour. Coöperation on the part of the woman is as complete as her intelligence will allow. That is, the highest types of women get the greatest benefit by intelligently using the gases as directed. A rigid or spastic cervix is, however, but little relaxed under this method in comparison with that of the use of such drugs as morphia, hyoscine, ether, chloroform, ethyl chloride or chloral. If the first stage is likely to be long and painful, I think the patient is better off at first to be under the influence of morphia and hyoscine. As the pains

increase in frequency and severity, however, gas and oxygen becomes the anæsthetic of choice. These gases do not stop contractions used in the following way, but permit the patient to bear down without pain or entire loss of conciousness. These gases are actually oxytoxic, but do not allow painful stimuli to reach the brain without greatly reducing their intensity. So much is this so that many women though conscious are unaware that a contraction has actually taken place. In marked and favourable distinction from twilight sleep, the patient is conscious between pains, can change her position, notify the nurse if she needs the bedpan, and is able to keep her hands from her genitalia. In suitable cases she may walk around the room between pains and aid in the engagement and moulding of the head by bringing into play the force of gravity, a valuable procedure in contracted pelvis. When her pain is about due she can recline on a couch, breathe in a few inhalations of nitrous oxide with sufficient oxygen to prevent cyanosis, and the contraction proceeds without her being aware of painful impressions. There is a tendency to amnesia. The patient does not fear the approach of the next pain for she knows that it will not hurt her. After the pain a few breaths of air, and she is herself again and may go around the room accompanied by the nurse. With certain types of machines, such as the Clark and McKesson, if desired, the patient may administer the gases to herself for much of the earlier stages of the labour. A mixture is determined by trial, to see what is the minimum amount of oxygen that will prevent cyanosis. When a pain comes on, the woman places the mask over her face, presses a button, breathes the gases, and is eased of her pain. There is little danger in this method if under the supervision of the obstetrician, for as soon as she is analgesic and before she is anæsthetic, she loses the power to press the button, which is then pressed up by a spring and the gases are cut off automatically.

When the head reaches the perineum in a primipara, or when delivery is about an hour away, the woman is put to bed, if not already there, and is draped with sterile coverings. A competent anæsthetist should now take charge of the anæsthetic. The woman is told to bear down, or breathe, as may be necessary. This she can do as the pain is absent or bearable. The pressure pain caused by compression of the sacral nerves is not entirely deadened by the gas and oxgen unless full surgical anæsthesia is given. The perineal nerves may now be surrounded by a local anæsthetic such as novocain or anocain thus following Crile's method of anoci-association, or as the head is distending the vulva

a little ether may be added to the gases with great advantage, as the relaxation of the perineum is very much greater with the addition of the ether than with the gases alone.

If the delivery is operative, I like to have the patient under full surgical anæsthesia with the gases and sufficient ether to obtain adequate relaxation. In repair of the perineum, gas and oxygen is ideal, as pain is removed without relaxation of the uterus taking place, as occurs with chloroform and ether, leading to the attending danger of post-partum hæmorrhage.

The exact technique of administration of nitrous oxide and oxygen must be learned by experience. The percentages of gases vary with each patient. Cyanosis is the danger sign. Give sufficient oxygen to prevent duskiness of the lips, ears, or fingers. If the pains are snappy and at regular intervals, one of two procedures gives good results. As soon as the patient feels a pain coming, have her quickly and deeply inhale three or four breaths of pure nitrous oxide, then *at once* add oxygen or air or remove the mask for a breath lest the patient rapidly become asphyxiated. This is so easily avoided that nothing but carelessness will allow it to happen since the danger signs of cyanosis, rigidity or twitching, are so apparent. These three or four breaths of pure gas quickly get the patient under, and she can then be maintained in an analgesic state as long as necessary, with a gas-oxy or gas-air mixture. The alternative method, which I prefer, is to give the patient a mixture of about 95 per cent. nitrous oxide and 5 per cent. oxygen, or 90 per cent. gas and 10 per cent. oxgyen for several breaths before the pain starts. This time can often be estimated by timing or by holding the hand on the abdomen; the observer can detect the uterus hardening several seconds before the patient is aware of the contraction having commenced. Then when the contraction reaches a stage where it would have caused suffering the patient is already under the analgesia, and further administration of gases is easy. The nearer delivery approaches, the greater should be the percentage of oxygen, since the patient tends to become saturated with the gas, especially when it has been given over a long period, and hence she needs less of it and the baby needs more oxygen. After the patient has breathed in the gases in the manner outlined above, the machine should be turned on to rebreathing. This not only conserves gas, but also prevents the patient losing an excessive amount of carbon dioxide. As the pain is going off, stop the gases and remove the mask.

Of course continuous light analgesia may be administered in suitable cases by a skilled anæsthetist, but it is not so safe as the

intermittent method, is more expensive, and generally less desirable.

There is a tendency for one to use too much gas and oxygen during the first few trials of this method and hence think it is more expensive than it subsequently proves to be when experience has been gained. In spite of the increased price of the gases, I can now in the average case give intermittent analgesia for slightly under two dollars per hour, when using a sight-feed-through-water type of machine such as the Safety Anæsthesia or the Gwathmey. The larger types of bag machines while not so economical nor portable are capable of finer and quicker variations.

Vomiting is rare with gas and oxygen if the patient is carefully prepared. When ether is added towards the end of the labour, slight vomiting is not uncommon, but is vastly less than would have occurred had straight ether been given, and rapidly passes off.

Nitrous oxide and oxygen analgesia I consider the safest of all analgesics in all hands, but I agree with Webster Davis, Edgar, Dickinson, and others, that pushed to full surgical anæsthesia it is the hardest anæsthetic to give, and unless in competent hands very dangerous.

With ether sequence or local anæsthesia at the proper stage supplementing when they are indicated, nitrous oxide and oxygen, properly given, have, in my opinion, no contraindications in the whole range of obstetrics. These gases produce the least pathological changes in the solid organs of any of the inhalation anæsthetics, and have the slightest tendency of all to produce acidosis, post-partum hæmorrhage, inertia, asphyxia neonatorum. Their after effects are evanescent and negligible.

I have employed these gases in several cases of grave cardiac decompensation, in preëclamptic toxæmias and in eclampsia where they are outstandingly the anæsthetic of choice. I have personally administered and had given for me these gases in cases with blood pressures ranging from 80 mm. of Hg. systolic to 260 mm. of Hg. systolic without appreciable change in the pressures except a fall in the highest attributable to loss of blood which was intentional. I have given the gases in cases of great irritation of the respiratory tract quite unsuitable for ether, and in kidney cases where chloroform would have done grave damage. In no case have I had any bad results attributable to the anæsthetic. The puerperium, is, I am strongly convinced, more normal than with any other anæsthetic.

In nitrous oxide and oxygen, however enthusiastic I may be

over its beneficent effects, all that can be justly claimed for it is, that, properly administered, it does nearly all that an ideal anæsthetic would do. It should not be used as the chief reason for a high fee. Its use should not be a blind for dirty, careless, inefficient or meddlesome midwifery. It is not a panacea for all the troubles afflicting the parturient woman. It is a very valuable and life-saving factor in obstetrics, but most emphatically, not the most important. Good obstetrical skill and judgement, a clean surgical technique using asepsis and antisepsis in their proper places, will ever be the most vital factors ensuring safe childbirth. Of what use is it to prevent a woman suffering if she is to die in a few days of sepsis? I recommend Dr. C. H. Davis' recent book on this subject, which I had the pleasure of reviewing for the *Hospital World.*

There are several points in the administration of these gases that it has been my good fortune to discover, and so far as I am aware, with one exception these details are not in print, and are original:

(a) If the baby is blue, asphyxiated, shocked, or apnœic at birth, turn on full oxygen to the mother, turn the baby upside down, and clear the throat of mucus, liquor amnii, blood, etc. This life-saving procedure is best accomplished with a Carton's mucus extractor which is so successfully used in Dublin, or a moderate sized sterile catheter. If the baby's heart is beating, however feebly, and the placenta attached to the uterus, barring fatal injuries to the head, the baby will in all probability speedily revive. It is a marvellous and joyful sight to see a limp white baby turn pink in a few moments, and start to cry spontaneously. You know the fatiguing and discouraging alternative of tubbing, artificial respiration, spanking, etc., perhaps carried out for hours before the feeble spark of life will revive. I worked three hours and twenty minutes last winter over such a case before it would breathe itself. How easy it would have been, had I had oxygen immediately available at the crucial moment to flood the baby with the live-giving oxygen through the placenta.

(b) In all forceps cases, between periods of pulling, give the mother an excess of oxygen; this is regardless of the kind of anæsthetic and applies to chloroform and ether as well as gas and oxygen. Thus the baby will have an excess of oxygen in its brain to carry it over the period of compression when the cranial circulation has nearly ceased.

(c) In cases of placenta prævia, and abruptio placentæ partialis, of the latter condition arising in a special sense, from the

former as soon as any separation and hæmorrhage takes place, oxygen is valuable; especially in a central placenta prævia where the cervix has been fully dilated by hydrostatic bags and the operator is ready to smash through the placenta and do a version and breech extraction, in the manner used at the Sloane Hospital, New York, which method gives the best fœtal results, is oxygen valuable just prior to this procedure. In breech cases and internal versions, ether should be added to get good relaxation when gas has been given.

(d) In breech immediately before attempting the extraction of the thorax and head, free the cord, saturate the baby with oxygen through the mother, and the vital three or four minutes may be very shortly prolonged with hope of a living child, that otherwise might be lost.

(e) In eclampsia not only is nitrous oxide the least damaging, but oxygen being deficient any way, is specially necessary.

(f) In abdominal Cæsarean section, just before opening the uterus, flood the mother with oxygen even if giving ether, and the baby will likely survive, if viable. This simple addition may be the vital factor.

(g) In any labour, should the child's life become endangered, as proven by tumultuous movements, failing fœtal heart sounds, eclampsia, long pressure, etc., give the mother oxygen freely, regardless of the kind of anæsthetic used. This measure will frequently be life-saving.

I have used nitrous oxide and oxygen in all stages of labours, normal and pathological, chiefly the latter, in operative procedures such as forceps, version, Cæsarean sections, abdominal and vaginal, with such conditions present as contracted pelvis, breech, placenta prævia, eclampsia, hæmophilia, etc., in some forty cases over a period of more than two years, and involving over sixty administrations. I find this method is by far the safest we have and my opinions are largely shared by my anæsthetists, especially Drs. T. A. Robinson and T. R. Hanley, who have helped me in many of my private cases, and to whose coöperation and enthusiasm I owe much.

If, as one of the pioneers in the use of this anæsthetic in obstetrics, I have added a few facts of value to others in their efforts to make labour bearable as well as safe, and if I have helped to stimulate an interest in this subject which seems destined to a great future, and have added my quota towards preserving human life and making motherhood healthier and happier, I have removed but a drop from the ocean-debt of love we all owe our mothers.

AN ANALYSIS OF THREE THOUSAND CASES OF OBSTETRICS

By S. P. Ford, M.D.

Norwood, Ontario

THE subject I have chosen for the foundation of my talk this evening, for I could not call it either a lecture or an address, is one intimately connected with that mystery of mysteries, the problem of human life. Whether we accept the evolutionary theory of Darwin as to the origin of human life, or fall back upon the literal interpretation of the Scripture narrative, it comes to the same thing in the end, namely, "the Lord God formed man of the dust of the ground and breathed into his nostrils the breath of life and man became a living soul." And in the never-ceasing reproduction through all the successive ages of the world's history, in all parts of the earth, among all the divergent races, by the self-same process of this complex being, formed of the dust of the earth and the breath of God, lies the greatest miracle of all miracles. Many men are found to-day who solemnly affirm that they do not believe in miracles, but they do nevertheless for they believe in themselves. Let these doubters consider for a few moments the apparently simple, but marvellously complex, process by which the result is wrought out, the coming together of the sexes, the passage from the male to the female of one or two centimetres of a white, glairy fluid, and from this small beginning, by some mysterious process of constructive evolution, unseen by mortal eye, the building up of this human mechanism with its wonderful combination of muscles, arteries, veins, capillaries, nerves, and lymphatics, the elaborate provision made by the formation of richly endowed special organs for the introduction, digestion, and assimilation of food, and for the regular elimination of the various forms of waste matter, and the whole work culminating, at the termination of a stated period of two hundred and eighty days, in the issuing into the world of that crowning glory of the Almighty's

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handiwork, a perfect child, who will dare to say that this is not the greatest miracle of all the ages? In the volume of the Sacred Law, in that book compiled by the wisest of men it is written, "Keep thy heart with all diligence for out of it are the issues of life." After mature consideration of the part they play in this great work may we not as appropriately say, study diligently, treat respectfully, handle carefully the female generative organs for out of them are the issues of life? I read some time ago in a medical journal, a statement made in an address by one of those self-constituted champions of woman's rights, to the effect that had she been entrusted with the duty of providing a scheme for the propagation of the human race, she would have devised some less obscene method than that in use by the lower animals. My conclusion at the time was that she was a spinster past middle age, who had never felt the magnetism of the sexual embrace, nor the heavenly thrill of happy motherhood. Certain it is that she had not the faintest conception of the dignity of the divinely appointed process that she so rudely despised. And I heard a physician say sometime ago that he would rather clean out a garbage can than attend a confinement, for he could use a shovel in the former case but would have to soil his hands in the latter. Poor fellow, he too had no conception of the honour conferred upon him in permitting him to act as a co-worker with the Almighty in this most honourable of all occupations, and should have been engaged by some municipal corporation to do the work he so greatly preferred. In all sincerity, I can say to you to-night that from the first time I entered a lying-in-room more than fifty years ago as an *accoucheur* down to the last time only a night ago, an undertaking repeated over three thousand times, I always did so with a profound sense of the responsibility resting upon me, as well as the great honour conferred. And feeling thus about the matter, no amount of money was ever for a single moment considered sufficient to induce me to interrupt the completion of a pregnancy, and in those cases when it was considerd necessary to do so in order to preserve life, as in the case of pernicious vomiting or puerperal eclampsia, it was always undertaken very reluctantly and only after consultation with a brother practitioner and never undertaken in the case of an illegitimate, except under the same distressing circumstances. My introduction to this branch of the profession was somewhat disheartening. My first case, which came to me a few days after commencing private practice, was a monstrosity of that peculiar type in which the whole superior part of the cal-

varium was wanting, and in making the preliminary examination my finger struck the brain substance, and for some anxious moments I did not know just where I was. My second case was one of twins at seven months, in a primipara, aged eighteen, both breech presentations. My third case was still worse, an arm and shoulder presentation, also in a young and somewhat hysterical primipara, necessitating podalic version. My fourth was a case of rigid os uteri, which for twenty-four hours resisted all efforts at dilatation, and I was not then familiar with the more modern methods of overcoming the difficulty. My next was one of, what I thought then, a frightful case of post-partem hæmorrhage, and I can assure you that my courage oozed from my finger tips as rapidly as the blood flowed from the patient. Small wonder was it that I began to think I had made a great mistake in entering the medical profession, and laid awake at nights dreading to hear the door bell ring, lest it should be a call to another nerve-racking case of confinement. But time, the great healer of all things, finally came to my relief; my next ten or twelve cases were all on Easy Street, so that I regained my courage, and was not seriously alarmed again until I met my first case of placenta prævia several years later.

Comparing the figures in my note book with those found in the large volumes on obstetrics, I find they approximate so closely that I need not spend time in enumeration. Of the three thousand cases attended in the fifty years, 1574 of the infants were males, 1424 were females, and two were hermaphrodites. The number of first confinements was 1542, and much the larger proportion of these occurred during the first twenty-five years of my practice, accounted for by the fact that since the opening up of our great North-West, and the building of the Canadian Pacific Railway, large numbers of our young men have listened to the exhortation "Go West, young man," and have emigrated toward the setting sun. The number of second confinements was 715; third, 275; fourth, 125; fifth, 74; sixth, 70; seventh, 47; eighth, 42; ninth, 38; tenth, 32; eleventh, 20; twelfth, 8; thirteenth, 5; fourteenth, 3; fifteenth 2; sixteenth, 1. My youngest subject was a little Home girl who became pregnant at the early age of twelve years and nine months, and was delivered of a healthy, well-formed male child at the age of thirteen years and six months; my oldest subject lacked only two months of completing her fiftieth year, and in both these cases, strange to say, the labours were comparatively easy. I note forty cases over forty-six years of age, and twenty-five

under fifteen years of age, one case in which pregnancy did not take place until eighteen years of marriage, although husband and wife were both apparently in perfect health, devoted to each other, fond of children, and cohabited during the whole period; and three cases in which fourteen, sixteen, and seventeen years, respectively, intervened between the first and second pregnancies. I had thirty-six cases of plural births; in five cases both children were males, and in six cases both were females, and the remaining nineteen male and female. In seven cases there was a breech presentation of both infants, the remainder were head and breech, nineteen cases, and head and feet four cases. In twenty-four of the cases one placenta served for both infants, in the remaining six there was a placenta for each; I note six cases of unmistakable placental disease, resulting in every case in the death of the child, either before or very shortly after birth. I narrowly escaped having a case of triplets, but the family removed from town a few weeks before the confinement, which I was engaged to attend, was due. I have attended nearly one hundred cases of illegitimate births, a large proportion of them during the first twenty years of my practice, easily accounted for by the greatly improved moral and social conditions prevailing in the community during the last twenty-five or thirty years. Many of these cases occurred in the poor and sparsely settled country to the north and north east of Norwood, where in those days many of the dwellings were mere shacks, with no nearby schools and only very occasional religious services. I went one Sabbath day, many years ago, into a settlement in a remote part of the township of Methuen, made up of about a dozen families, to see a poor woman suffering from puerperal fever, and they told me that they had not had a religious service of any kind in that settlement for ten years; after attending to the patient I proceeded to hold one forthwith. A great improvement has taken place since then. Now they have a day school, a Sunday School, and regular Sabbath services. I was called to another case in the township of Lake, forty miles north east of Norwood, where the woman had been in labour for fifty-six hours. They were six miles from any neighbour, and it was six miles farther on to the next neighbour; they had no school, no church, no post office, no reading matter of any kind, and the husband told me they had been living there for twenty-eight years.

I will now deal with the cases in groups, beginning with that dread of all rural practitioners, on account of the difficulty of getting prompt professional assistance. Almost needless to say that I refer to cases of placenta prævia.

Placenta Previa. I have been called to six cases of this class, three in my own practice and three in consultation. Three of them were cases of central implantation, and three of lateral or partial implantation. The lateral, as compared with the cases of central implantation of the placenta, were more easily disposed of. If the os was not sufficiently dilated to allow the introduction of the hand, I tamponed the vagina as tightly as possible with antiseptic gauze and waited. As soon as sufficient dilation had taken place, I introduced my hand, grasped the feet and completed a podalic version as rapidly as possible. As marginal attachment of the placenta does not, as a rule, give rise to special symptoms before gestation has advanced to seven months or over, it may be possible sometimes to save the child. But in cases of central or vicious implantation, symptoms occur at an earlier period, and as soon as the diagnosis is definitely established there is but one thing to do and that is to empty the uterus as speedily as possible without temporizing with either tampon or ergot or anything else. In two of these cases, I was able to pass my hand between the rim of the placenta and the uterine wall and do a version. Both mothers recovered but the infants had been dead for some time. In the third case, a young primipara recently from England, there was no hæmorrhage until the eighth month. It came on, however, very rapidly, and as I was unable to pass my hand around the edge of the placenta, and the urgency being extremely great, I pursued the heroic course of pushing my hand, amid terrific hæmorrhage, right through the centre of the placenta, fortunately avoiding the insertion of the cord, and grasping the feet I succeeded in turning and delivering both infant and placenta together in a few minutes. The result was very gratifying to me, namely, a living mother and a living child. That was ten years ago, and I am glad to say I have never had another such case since.

Equally dreaded by the rural practitioner are those cases of *Puerperal Eclampsia.* I have had twenty cases; in fifteen the seizures began before delivery, and in twelve of these the seizures ceased at delivery; in five cases the seizures did not come on until after delivery. Five of the twenty cases proved fatal, and in all of these five cases the eclamptic seizures came on before delivery, leading me to the conclusion that the post-partem cases are not to be so much dreaded as the ante-partem ones. As to treatment in asthenic cases with full, bounding pulse, high temperature, purple countenance, I would not hesitate a moment about opening a vein and abstracting twenty-five or thirty ounces of blood. I

have done this in several cases with the very best results. But in an asthenic case with feeble pulse, pale countenance and cold extremities, I certainly would not pursue that course; I saw it done once under such circumstances with a fatal result. Is it proper, in all cases where convulsions occur before delivery, to proceed at once to empty the uterus? My answer is no, not in all cases. If labour has already set in, and there is nothing to contraindicate it, I would expedite it by all means, even by an *accouchement forcé*. But if labour has not already begun, I would wait, using every possible effort to control the seizures, until nature showed symptoms of commencing her work, and then assist her in every way. My experience has been that we only add to the trouble by endeavouring to excite a quiescent uterus to expel its contents. Many cases of threatened convulsions were warded off by appropriate eliminative treatment. One case I recall where the urine showed 50 per cent. of albumin for several days.

Face Presentations make up another troublesome class of cases, for unless the head should be unusually small or the pelvis unusually large, it is impossible for the child to be born in this position. If called early the condition may sometimes be rectified by manual interference. Fortunately face presentations are comparatively rare. In only three of the eight cases that came under my care was I able to rectify the position, either by external manipulation or with the assistance of the forceps, and had to resort to podalic version.

Arm and Shoulder Presentations. I have had only ten cases of this very troublesome complication. In three of the cases, in which I was called early and recognized the difficulty before the rupture of the membranes, I was able to change the presentation by external manipulation, and where this expedient failed I resorted to podalic version. The infant mortality in these cases was one in ten.

Prolapse of the Cord. I had six of such cases and succeeded in saving the child in each case, either by holding the cord out of danger by my hand, or by fastening it to a gum elastic catheter and pushing it up out of harm's way until the descending head filled the pelvic outlet.

Occipito-Posterior Presentations. These have been comparatively rare in my practice, numbering only twelve, and as a rule have been very tedious cases. In a few of them I was able to change the condition by careful and persistent manipulation. In two cases I had to do a version, and in two others where the head

was small and the pelvis roomy I delivered with forceps. In the case of a young and somewhat petite primipara, I had a laceration of the perineum extending through the external sphincter.

Uterine Hydatids. My note book shows four cases of that curious and interesting phenomenon; in two cases representing one member of a twin pregnancy, and two forming a single shapeless mass of unorganized tissue, the so-called hydatiform mole.

Sudden Death. Not long ago I was expressing to a brother physician my gratification that during my long practice of over fifty years, I had never met one of those cases of terribly sudden death during confinement. But it came to me only a few days later. The patient was a young Englishwoman, twenty-four years of age, about a year married, living with her husband on a farm. She was apparently in the best of health, had had a normal pregnancy, was in ordinary labour a little over two hours. She got out of bed to urinate, the baby was born a few minutes after she returned to bed, and I was in the act of removing the placenta when she gave a gasp, and in few moments was dead.

Inversion of the Uterus. I record one case of complete inversion of the uterus, with the placenta still adherent to the fundus. It was caused by traction on the cord by the midwife before my arrival. The books say that reposition may be easy or extremely difficult, depending on whether the uterine musculature was lax or tightly contracted, especially the circular fibres at the lower zone. In this case, strange to say, there was very little hæmorrhage, notwithstanding the laxity of the muscular fibre, and after peeling off the adherent placenta I had not very much difficulty in returning first one horn and then the other, and finally the body of the uterus. The patient made a good recovery.

Fancied Pregnancy. Have had six cases of this peculiar condition, one lady coming all the way from Manitoba, bringing with her a trunk full of baby clothes. She returned minus the baby, and had no use for the clothes until several years later.

Forceps Cases. I have resorted to the use of forceps in nearly two hundred cases, and would not feel safe to go to a case any distance from home without them, but as a matter of fact I have only used them twice in the last eighteen months. This I attribute to the use of pituitary extract. I was very sceptical about the benefit to be derived from it for some time, and hesitated to use it, but now I never go to a case without it. When I began its use I gave the full centimetre dose, but in one or two cases it brought on such violent expulsive efforts that I was alarmed for

the safety of the uterine wall, and put the patient under an anæsthetic to relieve the strain. I avoid this now by giving only a half-centimetre dose at first and repeating it in twenty minutes or a half hour, if necessary; but in few cases will it be found necessary to repeat the dose. In these doses I have not found it to have injurious effect upon the infant; I have found pituitary extract especially useful in abortion cases at three or four months when difficulty is often found in emptying the uterus of the small placenta or portions of membranes. In most of such cases I have found it act like a charm.

In concluding this paper, let me say that I owe a great deal of my success in this branch of the profession to the instruction and counsel of my preceptor, the late Dr. George Burnham of Peterboro', and to the advice I received, when beginning my practice, from the late Dr. Hodder of Toronto. Learn, said he, to distinguish between promptness and hurry; always be prompt, never be in a hurry. And, furthermore, make it a rule never to leave the lying-in room until one hour after the last stage of the confinement is happily terminated. Better to miss a dozen calls than to lose one patient. By the strict observance of this rule I have saved life in several instances.

THE annual meeting of the Canadian Public Health Association and the Canadian Association for the Prevention of Tuberculosis will take place in Ottawa during the fourth week in September of this year. The Canadian Conference of Public Welfare, including the Ontario Children's Aid Society, the Association for the Care of the Feeble-minded, and the Canadian Conference of Charities and Corrections, will also meet in Ottawa during the same week.

HELIOTHERAPY IN ABDOMINAL TUBERCULOSIS

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THE value of heliotherapy in the treatment of certain forms of so-called surgical tuberculosis has been definitely established. Especially satisfactory results have been reported in tuberculous disease of bones and joints, both in closed cases and those with discharging fistulæ. In the latter there is frequently involvement of the skin as well at the opening of the fistulous track. Contributions on this subject have been presented to this association by Brannan and Hinsdale. Gardiner last year related some experiences with sunlight in the treatment of pulmonary tuberculosis. Other fellows, Klebs, Pottenger, Pryor, and Twitchell have recorded their views elsewhere, principally dealing with infections of bones and joints or with pulmonary disease. With the exception of Pryor's work, the cases have been treated under conditions involving rest in places which have recognized value as health-resorts—the Swiss Mountains, Colorado, California, or the seaside as recorded by Brannan in his story of the work at Seabreeze.

Pryor has demonstrated the possibility of securing good results at an inland point which boasts of no altitude, and I think I am correct in saying the hours of sunshine are less than those clouded.

My earlier experience with heliotherapy was in Muskoka several years ago when a group of men with pulmonary tuberculosis would take a row boat and each day the weather would permit them, would spend several hours in the sun on a nearby island. Most agreed that they were deriving benefit from their treatment, but I could not satisfy myself that their improvement could be ascribed wholly or even principally to the sun exposure. One of

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my patients has written, "The psychological effect upon the patient as treatment progresses is worthy of note. There is a certain feeling of well-being when basking in the sun, pleasant dreams are dreamt, and visions of happier days to come, flit before the mind." This group of men did well but no doubt the mental effect was as important and probably more important than the physical. They got away from their verandas and petty veranda gossip; they could see no painted walls from where they basked in the sun, but only great rocks of gneiss and granite clothed here and there with the foliage of the wilderness.

The treatment of abdominal tuberculosis to which I wish to refer, has been carried out within the confines of a large city with no particular climatic advantages outside the long days of mid-summer with many hours of sunshine, or the bracing effect of keen bright winter days which are uncertain as to the month of their appearance as well as to their duration. In fact, we may scarcely lay claim to the possession of climate but have instead, what our good friend and past president, W. F. R. Phillips, would doubtless prefer to describe as weather.

Toronto is a city of 500,000 people, situated on the north shore of Lake Ontario. The mean temperature for a series of years is 44·4 degrees; total precipitation 34 inches, six and one-half of which is represented by the mean snowfall of 65 inches; relative humity is 77. The yearly average of hours of sunshine is 2,048 or 5·61 daily, which is 46 per cent. of possible. Even with this percentage of sunshine, exceedingly good results may be obtained.

I have had experience with three types of abdominal tuberculosis, which have responded to heliotherapy.

1. Tuberculous enteritis.
2. Tuberculosis of the ileocæcal and appendix region.
3. Tuberculous peritonitis with ascites.

1. *Tuberculous enteritis.* Illustrative case, N. W. Single, aged nineteen.

In May, 1913, had "a slight cold which persisted". There also was debility. The site of her pulmonary lesion was at first difficult to place, yet the diagnosis was clear and tubercle bacilli were present in the sputum. The summer was spent in Muskoka under careful medical supervision with but little apparent benefit. After her return to Toronto in the autumn, improvement set in and in a few weeks cough and sputum ceased entirely. The pulse rate remained elevated and strength did not return, nor could we secure any marked gain in weight, and appetite remained poor. This

condition continued throughout the winter and early spring, making one feel that at any time a fresh outbreak of her disease might be expected. Later a cough with fever developed with very definite physical signs in the left upper lobe and in the month of May, 1914, a troublesome diarrhœa set in. This continued throughout the summer, and for over three months the temperature chart resembled that of typhoid. The usual remedies were tried without marked benefit and the patient became quite emaciated. The cough continued and tubercle bacilli were abundant in the sputum.

Towards the end of the summer of 1914 heliotherapy was begun and improvement soon set in. The diarrhœa gradually lessened as the temperature began to fall, appetite, which had been practically absent for a year, began to return and in a short time it was evident that the patient was gaining in weight. The retraction and dough-like feel of the abdomen soon lessened. The sun exposures were begun in the patient's bedroom which had a southern exposure, as no protected sunny porch was available. Strength gradually returned and the typhoid-like weakness and emaciation notably lessened. A little later she was moved into a tent in the garden, from which longer daily exposures were possible. With the improvement in the abdominal signs and symptoms, there was noted a decrease in cough and expectoration, with a corresponding lessening in the physical signs of active disease in the left upper lobe.

By October she was able to visit my office. Her weight now was 137½ pounds, her last previous weight in April was 90 pounds. During her enteritis, she must have fallen to 75 or 80 pounds, perhaps lower.

The cough and sputum gradually ceased. In December, she went to Ashville for the winter, but weather conditions were not found to be better than at home. She soon undertook exercise; strength returned and on her return to Toronto, weighed 127 pounds, no cough, was walking fifteen minutes daily, pulse 60 at rest, 72 after exercise, examination of abdomen, negative.

By June, 1915, she was walking forty-five minutes daily and stated that she never felt better in her life.

At present she is able to take full exercise, pulse and temperature normal; physical signs in the left apex those of a healed tuberculosis.

2. *Tuberculosis of ileocæcal and appendix region.* Illustrative case, P. W.

First sign of tuberculosis in July, 1912. Severe pulmonary hæmorrhage followed by a period of fever. Seen by me in September of same year, showing extensive physical signs of consolidation in left upper lobe from second to fifth rib in front, and both posterior apices and most of scapular region, pulse 110 to 120 at rest, sputum at first rather less than one ounce, gradually lessened but showed bacilli for two years. Physical signs posteriorly gradually cleared but those of consolidation and excavation persisted to left of the area of cardiac dullness.

During the winter of 1914–1915 he complained of abdominal pain soon after beginning a meal, at first only at lunch, but later at dinner as well, The pain was across the abdomen at or below navel. When eating in bed and using hot water bottle, the pain would be less or absent. It would often last one to two hours. Examination February, 1914, showed lower border of stomach at about level of umbilicus. Splashing present one hour after breakfast. Slight rigidity over right iliac fossa, tenderness at McBurney's point and below, palpable thickening in this area, pain on deep pressure radiating up toward stomach. Seen by Dr. Parfitt in consultation and by a surgeon who agreed with diagnosis, operation seemed advisable because of slight evening fever, 99° to 99 2-5°, and because of interference with nutrition. The consulting surgeon did not wish to undertake an operation fearing the result would not be satisfactory. Sputum at this time increased appearing through the day as well as in the morning as formerly.

With operation refused by the surgeon, heliotherapy was instituted in May, 1914. He had been on rest cure on an open porch for a year and a half, day and night, summer and winter, pulse rarely below 110 during the whole time, slight daily rise of temperature, appetite had become very poor and because of the severe abdominal pain it was impossible for him to take the nourishment he needed.

At the end of three months he was able to expose himself for three hours each morning and two hours each afternoon. The abdominal trouble gradually disappeared and an operation was no longer considered necessary. At the end of four months he had gained thirty pounds in weight, the cough had disappeared, sputum became very slight and was mucoid, and tubercle bacilli were no longer to be found. During the winter months he exposed himself but little. Last spring the exposures were again undertaken, sputum ceased and his physical signs and symptoms are now those

of healed pulmonary tuberculosis, with all abdominal signs and symptoms absent.

3. *Tuberculous peritonitis with effusion.* Case F. W. Rather acute onset simulating typhoid fever.

In second week with Widal negative and signs of effusion diagnosis of tuberculous peritonitis was made. The effusion increased until abdomen became much distended and he was admitted to St. Michael's Hospital. Temperature was persistently high for many weeks and there was no definite improvement until heliotherapy was instituted. The temperature then gradually fell. Throughout the winter of 1914–1915 his bed was kept alongside a window with south aspect, and the sun was far enough in the south to allow exposure from about 9 to 1 each day. On mild days the window was completely raised. His body became well browned and as this increased, the fluid decreased. In February he developed a pleural friction rub on the side exposed to the draft from the open window, but no effusion was at any time demonstrated. Before the warmer weather of spring arrived, he had overcome completely the evidence of toxæmia, all signs of fluid were absent and the friction was no longer present.

He was soon able to leave the hospital and has had no return of symptoms.

Method. The patients treated out of doors used the Adirondack recliner or similar chairs; those treated indoors in winter, a hospital bed of proper height. Treatment was begun with exposure of the feet to the direct sun for ten minute periods twice during the day, once in the morning and once after the rest hour in the afternoon. On the following day the abdomen was similarly exposed, increasing the exposure of the arms and legs by ten minutes each day, that is by five minutes morning and afternoon. By this method a progressive pigmentation of the skin was secured. One patient noted that on a cool, clear day the sun burns more intensely than on a hot, humid one, and with less warning of discomfort, so that if care be not observed painful blisters would result. Cloudy days interfered with the treatment but benefit was no doubt derived from simply exposing the body to the air. Screens may be arranged about the patient to ensure privacy and to break the force of unpleasant winds. When the sun is hot the head is to be shielded from the direct rays of the sun and smoked glasses are used to protect the eyes. One patient found that a sponging with an alcohol rub taken after exposure increased the feeling of well-being and would lower the pulse rate if increased.

Patients must be warned against the dangers of insolation, symptoms of which may appear and prove unpleasant if not dangerous, if too rapid increase is made in the exposure periods.

SUMMARY

In abdominal tuberculosis, heliotherapy would seem to be a valuable addition to simple rest cure in the open air.

Good results can be secured at home and in hospital.

The method is applicable even in large cities which have no special climatic advantages, as demonstrated in a city with 46 per cent. possible sunshine.

THE question of enlarging the pathological laboratory of the Regina General Hospital was discussed at a recent meeting of the hospital board. Two members of he board considered it inexpedient to spend the required sum of money at this time, as, in their opinion, such matters should be left over until after the war. The importance of providing more adequate facilities for pathological work at the hospital was pointed out, however, and it was decided eventually that the necessary addition to the pathological department should be made and that the superintendent should be instructed to advertise the position of pathologist.

A SHORT DISCUSSION OF SOME PHASES OF GASTRIC AND DUODENAL ULCERS WITH REPORT OF CASES

By A. Moir, M.R.C.S., L.R.C.P.

HISTORY. While records of patients with hæmorrhage and perforation, undoubtedly due to ulceration, are found in medical literature as far back as the tenth century, it was not until Matthew Baillie, in 1793, described it anatomically that the disease possessed a definite place in medical thought. Cruveilheir was the first to discuss it from all sides about 1830. He was also the first to distinguish between cancer and ulcer of the stomach. Duodenal ulcer was first described by Abercrombie in 1824, but very little progress was made in our knowledge of these conditions until near the close of last century. Since that time these conditions have become much more thoroughly understood, largely due to the rapid strides taken in gastric surgery, and the information furnished by the opaque meal and the *x*-ray.

Until about the beginning of the present century, it was thought that gastric ulcer was of very much more frequent occurrence than duodenal, but more recent observations have proven, conclusively, that the reverse is true. Dr. W. J. Mayo, in a paper read before the Association of American Physicians in Washington, in 1915, made the following statement in regard to cases treated in the Mayo Clinic.

The relation of gastric to duodenal ulcer was as follows:

In 1904....	Gastric....73 per cent.	Duodenal....27 per cent.
In 1907....	Gastric....52 per cent.	Duodenal....27 per cent.
In 1910....	Gastric....35 per cent.	Duodenal....65 per cent.
In 1914....	Gastric....27 per cent.	Duodenal....73 per cent.

Moynihan, Robson, and in fact observers in the large clinics all over the world, have independently reached practically the same conclusions. It was at one time thought that ulcer occurred much more frequently in some localities than in others, that geographical situation had something to do with its causation. Even Osler in

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his work published in 1908 gives considerable prominence to this view. One reason for thinking that some parts of the world are particularly prone to the development of ulcer, I think, lies in the fact that medical men in some localities are better able to recognize it than in others, and consequently see more of it, though it is quite possible that localities in which throat troubles are prevalent suffer more not only from ulcer of the stomach and duodenum, but from appendicitis and gall bladder troubles as well. Age and sex were also thought to have an important bearing on the occurrence of ulcer, and while they are probably more or less important, we know that both gastric and duodenal ulcer may occur at any age and in either sex. Several cases have been reported in medical literature, of definite ulceration occurring shortly after birth, and I had a case of perforated duodenal ulcer in a man over eighty years of age.

Ætiology. The various theories which have been advanced to explain the ætiology of ulcer of the stomach and duodenum are ingenious and interesting, but one after another these views are being abandoned, and it is becoming more and more evident, that many if not all cases of gastric and duodenal ulcer owe their origin to some infective process. The source of infection may not always be the same. It may come from the tonsils, the teeth, suppurating ears, nasal trouble, or from various other sources. There are many things that go to support this view, viz., the frequent association of ulcer with other infective processes, the frequency with which ulceration is associated with appendicitis and gall bladder disease, but above all the experimental work of Rosenow and many others. The work done by these men, and the light they have given us, furnishes the most interesting chapter in the study of these conditions. By their experimental work they have proven, not only that gastric and duodenal ulcer can be produced by the intravenous injection of certain organisms; but they have also proven the close relationship which exists between chronic appendicitis, gastric and duodenal ulcer, gall bladder and pancreatic disease. To show that by one and the same organism, differing only in virulence, all of these conditions may be produced, I cannot do better than quote Rosenow's own words, from a paper which he read before the Indiana State Medical Association, at Indianapolis, in 1915. He says:

"I wish to call attention briefly to certain results following intravenous injection of streptococci which seem to throw some light on the mode of origin and pathogenesis

of appendicitis, ulcer of the stomach and cholecystitis. The accompanying table gives the incidence of lesions in the appendix, stomach and duodenum, gall bladder, pancreas and intestines in animals, following intravenous injection of streptococci from appendicitis, ulcer and cholecystitis, when first isolated, after cultivation on artificial media for some time, and after animal passage. It is seen that fourteen strains from appendicitis produced lesions in the appendix in 68 per cent. of sixty-eight rabbits injected, which is in marked contrast to an average of only 5 per cent. of lesions in the appendix in animals injected with strains isolated from sources other than appendicitis. Eighteen strains from ulcer of the stomach or duodenum produced hæmorrhage in 60 per cent., and ulcer of the stomach or duodenum in 60 per cent., a combined total of 74 per cent. of the 103 animals injected, in contrast to 20 per cent. hæmorrhages and 9 per cent. ulcers following the injection of other strains. Twelve strains from cholecystitis produced lesions of the gall bladder in 80 per cent. of the forty-one animals injected, in contrast to an average of only 11 per cent. of the other strains.

"From studies of the effect of animal passage on nonvirulent laboratory strains of streptococci, it was found that virulence appeared to be a factor in determining the place of survival of streptococci on intravenous injection. If the localization is related to virulence, then the incidence of the occurrence of ulcer and cholecystitis should become greater as the appendicitis strains are passed through animals, and appendicitis should occur oftener after the ulcer and cholecystitis strains loose their virulence by cultivation on artificial media. This is found actually to be the case. Thus the strains from appendicitis on isolation, produced ulcer of the stomach and duodenum, and lesions in the gall bladder in 1 per cent. of the animals, whereas after animal passage lesions occurred in 30 and 40 per cent. respectively."

Deaver of Philadelphia says: "Appendicitis is by far the most common intra abdominal disease. It is therefore the most common avenue by which infection may reach the abdominal circulation. Granting this is true, we have the keystone of the arch of intra abdominal diseases, which are always the result of infection. I believe the appendix is responsible for liberating the infection which in turn causes gastric as well as duodenal ulcer, and other forms of upper abdominal disease in an overwhelming number of cases."

This certainly throws a great deal of light on the ætiology of these conditions, and Rosenow's findings are quite in keeping with clinical experience. How frequently one sees attacks of appendicitis follow such acute infections as tonsillitis, influenza or typhoid fever. These attacks are entirely too frequent to be merely coincidences, and in the light of Rosenow's work I think we may easily see in them cause and effect.

Syphilis may also be a cause of gastric ulcer. In a report published by one of the German clinics in 1915 of 106 cases of syphilis with gastric disturbance, all of which gave a positive Wassermann, thirteen had definite evidence of ulceration. In none of these could a tumour be found and the röentgen picture gave none of the characteristics of callous ulcer so that gummatous ulceration could be excluded.

Symptoms. Both duodenal and gastric ulcer may occur without producing any symptoms. This has been proven beyond a doubt by autopsy findings. It is also proven by the fact that not infrequently perforation occurs without any history of previous gastric disturbance. As a rule, however, one is able to get a definite history of digestive disturbance which in the more chronic cases may have lasted for years. This disturbance may vary from a very slight indisposition, to that associated with severe hæmatemesis or such severe pain as to make life a burden. I have frequently noticed that the digestive disturbance in a given individual tends to follow a definite type. That is to say the symptoms occurring in different attacks resemble one another very closely and are often not influenced greatly by the character of the food taken. The symptoms of gastric ulcer tend to vary much more than those of the duodenal type. This is largely due to anatomical reasons, the area of the stomach being much greater than that of the duodenum, the location of the ulcer may be subject to greater variation, hence the greater variation in symptoms. Ulcers away from the pylorus tend to cause pain shortly after food, but those situated near the pylorus give symptoms often indistinguishable from those of duodenal ulcer. In these as in duodenal ulcer, pain comes on two or three hours after food, is often of a burning or gnawing character, and is often associated with gas and acid eructations, it is usually relieved by taking food or by alkalies. Some observers have laid great stress in duodenal ulcer, on the pain occurring in the night about two or three a.m. While very suggestive when present, there are many cases of duodenal ulcer in which it does not occur. Another important feature in the symptomatology of these conditions is found in the tendency there is for all symptoms to disappear for weeks or even months at a time, during which time the patient may feel perfectly well. The remission of symptoms in this way is a very important point in diagnosis. Vomiting may or may not be present in the early stages, but in the chronic cases with obstructive symptoms it is a very troublesome symptom. The stomach often secretes into its own cavity and patients will vomit quantities very much in excess of that taken in the way of food or drink. Hæmatemesis occurs in about 25 per cent. of cases and may be very slight or so severe as to cause death. First hæmorrhages, however, are rarely fatal.

Pain is a prominent symptom in most cases but its character may vary widely. In gastric ulcer there is a greater tendency for the pain to pass through to the back, and less tendency for it to be

relieved by food. In duodenal ulcer there is a greater tendency for the pain to come on two or three hours after food, and to be relieved by food and alkalies. In duodenal ulcer the pain frequently remains localized although it may pass to the back and radiate to the shoulder as much as any case of gall bladder disease.

Diagnosis. It is very important that a careful history be taken in every case of digestive disturbance, for I think it is true without exception that when we get digestive disturbance occurring in a patient who is careful of his diet and habits of eating, and whose teeth are good there is some organic condition giving rise to the trouble, it may be a chronic appendix, gall bladder disease, ulcer or some mechanical interference with the action of the bowel from kinks, adhesions, etc. The physician is at least twenty-five years behind the times who would satisfy himself with a diagnosis of torpid liver in such a case. While we must admit that ulcers may exist without symptoms, generally speaking there is a more or less lengthy history of gastric disturbance in ulcer cases which tends to assume a definite type. The family history is not usually of much assistance, but there seems to be a tendency for the gastric type of ulcer to develop more frequently in young females, and the duodenal type in young males.

Physical Examination In gastric ulcer the point of tenderness is usually near the middle line, and the pain frequently passes through to the back. In duodenal ulcer on the other hand, it is usually to the right of the middle line and may occupy an area almost identical with that of the gall bladder. In such cases a valuable method of distinguishing between the two is to make firm pressure under the costal margin with the fingers while the patient is asked to take a long breath. In gall bladder disease the pain is increased by such procedure, while in the case of duodenal ulcer the pain diminishes as the tender duodenum slips out from under the hand.

The examination of the stomach by means of the opaque meal and *x*-ray is a very valuable means of distinguishing ulcerative conditions from others which furnish a similar set of symptoms. The technique of stomach examination by means of the *x*-ray has been so perfected in the last few years that it furnishes one of the most valuable means we possess in the diagnosis of these conditions. In the case of gastric ulcer we can sometimes see the crater of the ulcer filled with barium after the meal has passed from the stomach, and in duodenal ulcer the six hour retention, hyperperistalsis with cap deformity makes the diagnosis certain.

The chemical analysis of the stomach contents is not considered

now to have the same value in diagnosis as it had some years ago. Hyperacidity is the rule but there are many other conditions in which it may occur, and it may be absent in ulcerative conditions. To quote Dr. W. J. Mayo: "The history is of first importance, *x*-ray examination second, physical examination third, and the purely laboratory findings a poor fourth. Of course in every case all these methods deserve consideration."

Differential Diagnosis. Cholecystitis or gall stones often produce symptoms identical with those of duodenal ulcer or gastric ulcer in the pyloric region. This is well illustrated by the following case:

Mrs. G., aged about fifty years. I saw this case in company with Dr. Neal. She had attacks of indigestion with gas and sourness over twenty years ago. Twelve years ago severe pain with vomiting followed with jaundice. Was ill at that time for six weeks. Was perfectly well then for periods of months at a time, but sick at intervals for a week or two at a time with vomiting and pain and jaundice in some of the attacks. Ten years ago she came to Canada, was very sick all the way, vomited and had very severe pain in the epigastrium passing through to the back and up to the right shoulder. She described the pain as cruel. For two years after coming to Canada she was perfectly well, then the attacks began again. Three years ago went back to the old country for a visit thinking that it would help her. Was ill the whole five months she was away and jaundiced the greater part of the time. Tenderness in this case was situated in the gall bladder area. We made a diagnosis of gall stones and advised operation. During the summer of 1915 she was perfectly well, but in October she had another attack of pain and vomiting, the pain radiating to the right shoulder; this time she was deeply jaundiced. She consented to operation and I sent her to the Nicholl's Hospital and operated, assisted by Drs. Neal and Mann. We made an incision through the right rectus, about an inch to the right of the middle line, and found a perfectly normal gall bladder, but in the duodenum about an inch from the pylorus was an ulcer which perforated at the time of operation. We stitched up the ulcer and did a posterior gastro-enterostomy, she made an uneventful recovery and has enjoyed perfect health ever since.

I do not think you could get a case that would give a more typical history of gallstones and yet she had a perfectly normal gall bladder.

Appendicitis may also simulate duodenal ulcer so closely that it is not possible to make a diagnosis from the symptoms or clinical history. The following case illustrates such a condition:

P. K., male, age thirty-two, baker by trade, suffered for several years from periodical attacks of pain in the right hypochondrium. He suffered more or less at all times from hyperacidity and hunger pain, culminating every few months in a very severe attack of pain in the right hypochondrium, a spot of localized tenderness about an inch and a half in diameter situated an inch and a half above and to the right of the umbilicus, and rigidity of the upper part of the right rectus. There was never any tenderness at McBurney's point. The attacks usually began about midnight and reached their maximum intensity about four or five a.m. Nothing but morphine hypodermically would give any relief. I made a provisional diagnosis of duodenal ulcer and sent him into Nicholl's Hospital for *x*-ray. The *x*-ray examination showed the stomach and duodenum to be perfectly normal but the cæcum did not occupy the

right iliac fossa but laid directly under the liver and there was considerable stasis at that point. I told him that I was satisfied that the trouble was in the appendix and advised removal. On March 13th, 1916, assisted by Drs. Neal and Mann, I operated and found the gall bladder and duodenum and stomach normal, and an appendix about four inches long in a state of chronic inflammation lying in the region which I have already indicated. He made an uneventful recovery and has been free from attacks since.

It is in cases such as the last two that I have mentioned, that the *x*-ray is invaluable in diagnosis.

Acute Gastritis. Here there is usually a definite cause for the attack. The history does not reveal periodic attacks coming on without apparent cause, and the pain and tenderness is more diffuse.

Gastrotoxic Conditions, especially when associated with hæmatemesis, may be difficult to differentiate. The tenderness in these cases will be more diffuse, there will frequently be symptoms of a general toxæmia, and the history will also serve as an important guide.

Acute Pancreatitis may simulate perforated gastric or duodenal ulcer very closely. This is shown very well by a case which Dr. Baker asked me to see with him last fall at St. Joseph's Hospital. The patient was an American lady about forty years of age, while up the lakes on a fishing tour was seized with very violent pain in the upper abdomen which passed through to the back. There was also severe vomiting and collapse. When she reached the hospital her condition was very grave. There was considerable abdominal distention and tenderness with some rigidity, and a mass about three or four inches in diameter, dull on percussion, could be plainly felt above and to the right of the umbilicus. Our diagnosis was between ruptured ulcer and acute gall bladder trouble. On opening the abdomen we found the mass which we felt to consist of œdematous omentum studded with areas of fat necrosis each about one-eighth inch in diameter. The pancreas was much swollen and infiltrated with clotted blood. We put in drainage and closed the abdomen but she died the next day.

Carcinoma. The diagnosis between carcinoma and the more acute types of ulcer is not usually difficult; but in the more chronic types of ulcer with much thickening of the stomach wall and perigastric adhesions the diagnosis may be as difficult as it is important. In all cases of gastric ulcer which have lasted for some years and in which the symptoms are getting more continuous, and especially if a tumour can be felt, cancer must be thought of. In such cases the chemical analysis of the stomach contents and the *x*-ray findings will be a great aid. Gastric ulcers are very prone to become malignant whereas duodenal ulcers rarely if ever do so.

Complications. The most important complication of either gastric or duodenal ulcer, in my opinion, is perforation; and it is by no means a rare occurrence. It may be either acute or chronic. In the chronic types sufficient irritation has been produced previously to form adhesions to surrounding structures, and thus limit the escape of gastric or duodenal contents. Ulcers on the posterior surface of the stomach are much less likely to perforate than those on the anterior surface or in the duodenum; and when it does occur is more likely to be of the chronic type. The reason for this is found in anatomical relations. The posterior wall of the stomach lies in contact with relatively rigid and immovable structures, it is therefore better supported and perigastric adhesions are more likely to form. The anterior surface on the other hand is in contact with less rigid and more movable structures, on this account protective adhesions are less likely to form, it is more liable to become distended, and is more subject to external trauma.

Perforation of a gastric ulcer is mueh more serious than that of a duodenal ulcer for two reasons:

1. The stomach contents are not so sterile as those of the duodenum.

2. The stomach is much larger than the duodenum, and there is likely to be a much larger quantity poured into the peritoneal cavity. The time at which perforation of a gastric ulcer occurs also influences the prognosis. If it occurs when the acid secretion is at its height the stomach contents are more nearly sterile then than at other times. Again if the stomach is distended with its contents a larger quantity will escape into the peritoneal cavity and a more widespread soiling occur than if it occurred when the stomach was empty.

Symptoms of Perforation. These differ according to whether the lesion is in the stomach or duodenum, and whether it is of the acute or chronic type. I shall speak of the acute type only. The patient is seized with sudden severe pain in the epigastrium, there is marked collapse, vomiting frequently occurs and the vomitus may contain blood. If seen early the abdominal muscles are very rigid, and there is marked tenderness above the umbilicus, the abdomen tends to be scaphoid. After a short time, especially in duodenal ulcer, the acute symptoms tend to pass off and we get what may be termed a latent interval lasting several hours, during which time the patient may feel and appear quite well. This is a very important point to remember in any case with a history at all suspicious of perforation, especially if not seen until two or three hours after

the onset of symptoms. If perforation has occurred, I do not believe that the rigidity ever passes away completely and therefore is the one sign that must be looked for very carefully and if found operation should be insisted upon. The occurrence of a latent interval was impressed on my mind very forcibly by a case which I saw while in the London hospital, London, England. One morning a man was brought to the admitting department in the ambulance with the following history. He was walking along the street when he was suddenly seized with such a severe pain in the epigastrium that he fell. By the time he reached the hospital he had recovered somewhat, and the admitting surgeon being busy left him lying on the stretcher until his turn came which was about an hour and a half later. By that time he was feeling quite well. The examining surgeon made rather hasty examination, and came to the conclusion that there was nothing seriously wrong and allowed him to go home. Late that night the man was brought in again, suffering considerable pain, the abdomen was slightly distended, temperature and pulse were going up, he was admitted and operated on, a perforated ulcer was found, and he died the next day.

Therefore in any case with a suspicious history we should look carefully for the slightest trace of rigidity even though the patient appears perfectly well.

In perforated duodenal ulcers the fluid tends to gravitate to the right iliac fossa, and many of these cases have been mistaken for appendicitis. Moynihan, in 1901, collected forty-nine operations for perforation of the duodenum, eighteen of which had been diagnosed as appendicitis. The treatment of perforation is immediate operation. If operated on within the first six hours the mortality should not be more than two per cent., with each hour after that the mortality increases; if more than twenty-four hours elapse, unless the perforation is surrounded by adhesions, very few will recover.

In cases of acute perforation the history may not help us much in making a diagnosis. This is illustrated by the two following cases:

On July 31st, 1915, Mr. T. T., farmer, aged about fifty years, had pitched hay all day, came home to tea and was feeling so well that he went out to hoe in the garden. He had only worked a short time when he was seized with a sudden and very violent pain in the epigastrium. The pain was so severe that for a time he was unable to move. After a little while he was able to get to the house and called Dr. Russell of Baillieboro. The doctor thought he had a perforation and took him to Nicholl's Hospital in his own car. I saw him in consultation with Dr. Russell as soon as they arrived, and at that time the abdomen was extremely rigid and tender all over, but we thought that it was slightly more rigid on the right side than the left, though the difference was very slight. The abdomen was scaphoid and dull to percussion all down the right side. We came to

the conclusion that it was either a case of perforated appendix or duodenal ulcer and advised immediate operation. We first made a short incision through the right rectus with its centre opposite the umbilicus. On opening the peritoneal cavity a considerable quantity of bile stained fluid escaped. We made a hurried examination of the appendix and found it normal. We enlarged the incision in the upward direction and found a punched-out ulcer in the duodenum about three sixteenths of an inch in diameter with considerable œdema of the intestinal wall around it but without any sign of obstruction. We stitched up the ulcer and closed the abdomen with drainage. He made an uneventful recovery and has enjoyed the best of health ever since.

The same week a middle-aged woman was sent in from the country to the Nicholl's Hospital, where I saw her in consultation with Dr. Neal. She gave the following history: She was wakened one morning about four a.m. with a very violent pain in the abdomen, accompanied with severe vomiting. The local physician was summoned, who thought she was suffering from acute intestinal obstruction. He gave her several enemas but no flatus or fæcal matter was passed. He advised her immediate removal to the hospital but owing to the distance from town and other obstacles she did not reach here until night. At that time she had much abdominal distention and was quite collapsed. We advised the friends that her condition was very critical, but that her only hope was in immediate operation, and it was their wish that it be undertaken. With the assistance of Dr. Neal I made an opening in the right rectus with its centre opposite the umbilicus, and on opening the peritoneal cavity a considerable quantity of bile stained fluid escaped. I enlarged the opening in an upward direction and in the duodenum we found a spot in which there were five or six small perforations, there was no sign of obstruction so we stitched up the lacerated area and closed the abdomen with drainage. She rallied somewhat for a time but towards the next evening she died. This goes to show that in order to get good results in cases of perforation operation must be undertaken early.

Hæmorrhage is sometimes a very troublesome complication, but considering the frequency of its occurrence it is not often fatal. In severe cases it may be very hard to determine whether the case should be treated medically or surgically. Generally speaking a first hæmorrhage is not often fatal, and for this reason one should try to avoid surgical procedure until the fluid content of the blood is restored and the shock recovered from. I feel strongly that this is the wise course to pursue, for under medical treatment, rest and rectal feeding, there is a strong tendency for such cases to improve; and cases that have suffered from severe hæmorrhage make very poor operative risks. I have found the intravenous injection of plain horse serum very beneficial in two cases that showed a tendency for the hæmorrhage to continue. While it is not generally considered good treatment to pass a stomach tube in the presence of hæmorrhage, if the stomach is filled with blood I believe it is wise to pass a soft tube and wash out the blood with cold water to which has been added some adrenalin solution. We know that a uterus will continue to bleed as long as it is in the uncontracted state, and I believe the same is true of the stomach, but of course in less marked degree. But a distended stomach is more likely to bleed than a

contracted one, hence my reason for washing out. When, however, the patient has recovered from the effects of the hæmorrhage, I think it is much safer to operate than wait lest another and more severe hæmorrhage should occur. Of course this applies only to those cases in which we are certain that the hæmorrhage is due to ulceration. In cases associated with severe hæmorrhage we are debarred from using the opaque meal and the *x*-ray, or the test meals and stomach tube as a means of diagnosis, so that we have to depend largely on the previous history and physical signs for our diagnosis. If the history points clearly to ulcer I think our duty is to operate as soon as our patient has recovered from the effects of hæmorrhage.

The following case illustrates very well the tendency to continued bleeding in some cases and the benefit received from operation.

Miss E. F., aged fifty years, seen in consultation with Dr. Ross, of Keene, January 9th, 1916. She gave the following history: Family history negative except for the fact that several members of the family connexion had suffered from more of less severe attacks of anæmia evidently of the secondary type. In 1904 and 1905 she had vomiting spells every three or four weeks, with severe epigastric pain and hæmatemesis. The attacks then subsided and she was fairly well until she had an attack of rheumatism in 1910. In 1911 she had a very severe attack of pain in the right hypochondriac region, which was diagnosed as gall stones, and for which she had to have hypodermic injections of morphine. In 1915 she began to be troubled with hyperacidity, the distress coming on from one to two hours after food. This gradually increased until September, 1915, when the hyperacidity was accompanied by severe pain which she described as awful. In November, 1915, she began to vomit blood and would vomit bright red blood two or three times in each attack. She says she is sure that she vomited nearly two quarts in some attacks. Stools were always black at these times and would not clear up in the short intervals between the attacks. She was having from one to two attacks a week when I saw her with Dr. Ross. We advised her removal to the hospital and she was brought into the Nicholl's Hospital on January 12th, three days after the consultation. Her hæmoglobin at that time was 30 per cent., and her red blood count 1,850,000. By rest, rectal feeding and medical treatment she improved gradually until early in March she had a red blood count of nearly 4,000,000. On March 13th, 1916, assisted by Drs. Neal and Mann, I operated and found a good sized ulcer on the posterior wall of the stomach which I excised and did a posterior gastro-enterostomy. She made a rather tedious recovery at first but was able to leave the hospital in good condition in four weeks after the operation. Since leaving the hospital she has enjoyed perfect health. I saw her a few weeks ago and she said she had not been so well in fifteen years as she had been since the operation.

Pyloric obstruction is likely to occur in the case of chronic ulcers situated near the pylorus, and in chronic gastric ulcers situated away from the pylorus we may get marked stomach deformity, and in some cases hour-glass contraction. Pyloric obstruction may occur even in acute cases, when the ulcer occurs near the pylorus either on the gastric or duodenal side. The obstruction

in these cases may be largely due to the pyloric spasm produced by the irritation of the ulcer, and the œdema around the ulcer may also produce considerable mechanical blocking. The obstruction in these acute cases is intermittent in character.

The following case was one of hour-glass contraction, due to an old saddle ulcer, and was referred to me by Dr. Sutton of Norwood.

Miss E. J., aged twenty years. Family history: Father was suffering from inoperable carcinoma of the stomach. He was treated for ulcer of the stomach seven years before, otherwise the family history was negative.

Personal History. Had rheumatism in 1910, following this she had some trouble with her stomach which was diagnosed as acute indigestion, then she began to vomit continuously and was in bed two weeks and treated for ulcer of the stomach. To use her own expression, after that she would feel dandy for two or three weeks then all-in for two or three weeks. She never vomited much blood, but had black stools quite often. For the week before coming to the Nicholl's Hospital she vomited almost continuously. The pain was excruciating in the epigastrium and radiated towards the left side, was relieved by soda and sometimes by food. I gave her a barium meal and examined her stomach with the *x*-ray and found she was suffering from an hour-glass contraction of the stomach. The constriction which was almost complete, was situated near the pylorus, and the fundus of the stomach was practically normal. On January 13th, 1916, I operated on her, assisted by Drs. Sutton and Neal. I found a complete constriction of the stomach in the region shown by the *x*-ray, and as there were a good many adhesions and the fundus was quite normal, I did a posterior gastro-enterostomy. She made an uninterrupted recovery and left the hospital on the twelfth day. I saw her a few weeks ago and she said she had enjoyed perfect health ever since the operation and gained thirty pounds. Generally speaking in these cases I believe that it is better to do a sleeve resection of the stomach than a gastro-enterostomy if conditions permit, for in doing so one not only relieves the obstruction, but removes the ulcerated area and with it the danger of the development of cancer later in life. In cases such as this, however, where the ulcerated part is bound down by dense adhesions, I think a gastro-enterostomy is the best procedure.

Carcinoma. The development of cancer from ulcer of the stomach and duodenum was for many years a debated question. Most observers, I think, are now willing to admit that gastric ulcer is a frequent precursor of cancer, but that duodenal ulcer has not the same tendency to become malignant. Wilson and McCarty, of the Mayo Clinic, have demonstrated the fact, that cancer frequently develops not from the base but from the overhanging edge of the ulcer. When it develops from the base of the ulcer, it is considered cancer from the beginning; but when it develops from the edge it is undoubtedly secondary to the ulcer. Von Eiselberg, in a paper published in the London *Lancet* in 1914, states that ten per cent. of the cases he had operated on for gastric ulcer subsequently died of cancer of the stomach. The father of the patient with hour-glass contraction which I have just reported goes to show the same thing. In 1909, he was treated for ulcer of the stomach, and he died in the fall of 1916 from cancer of the stomach.

Treatment. One is immediately confronted with the question are all cases of gastric and duodenal ulcers to be considered surgical? I would say quite emphatically no; but one should be constantly on his guard to determine when the case does pass from the realm of medicine to that of surgery and should not then temporize. There is a strong natural tendency for acute ulcers to heal. This has been proven by the rapidity with which healing has been observed to occur in ulcers produced experimentally. In such cases therefore medical treatment and not surgical is indicated. To be effective, however, the treatment must be carried out very rigidly.

1. Rest in bed for four to eight weeks.

2. Total abstinence from food for at least a week or longer if the symptoms are not subsiding, the patient being fed in the meantime by nutrient enemata.

3. If hæmorrhage has been severe, an ice bag to the stomach, horse serum intravenously and morphia hypodermically.

By these means a large number can be relieved and some cured. Of course it is always hard to say how many are cured even though the symptoms subside, for we know the strong tendency there is to remission in these cases. Acute cases which do not improve under medical treatment, cases with severe or recurrent hæmorrhage, and all subacute and chronic cases should be considered surgical. The tendency for gastric ulcers to become cancerous must not be forgotten, and on this account any case in which gastric ulcer has been positively demonstrated, by *x*-ray or otherwise should be operated on and the ulcer excised. Dr. Balfour, of the Mayo Clinic, devised a means of removing the ulcer by means of the thermo-cautery. It is undoubtedly a very excellent and simple method and is fully described in the "Mayo Clinics".

The form of surgical procedure adopted in a given case will depend on the nature of the case and the judgement of the operator. All operative procedure has two ends in view, viz.:

1. The relief of pyloric spasm or obstruction.

2. The modification of the acidity of the gastric juice so as to facilitate the healing of the ulcer.

To attain this end one of two procedures may be adopted. A gastro-enterostomy may be done or some plastic operation on the pylorus. Generally speaking a gastro-enterostomy of the posterior type is to be preferred. The mortality is lower and the end results better. The physiological results of gastro-enterostomy have been carefully studied by many competent observers, and their investigations go to show that by it the acidity of the gastric juice is permanently lessened in some cases as much as thirty per cent.

The question of blocking the pylorus is one on which many surgeons differ. The indications for blocking I consider to be, severe hæmorrhage and acute perforation; other cases I think do fully as well or even better without blocking. In any case if there are many adhesions which would make blocking difficult it is better not to do it.

Prognosis, in the case of gastro-enterostomy for duodenal ulcer, is good. In the case of gastric ulcer the prognosis is more uncertain. It is very hard to estimate the benefit derived from operation by means of statistics, for statistics necessarily cover a period in which gastric surgery was not so well understood as it is at present, and cases then were not considered surgical at as early a period in their history as they are now. Furthermore it is only in the last few years that the tendency for gastric ulcers to become cancerous has been appreciated, and the necessity for the excision of all gastric ulcers recognized.

Complications following gastro-enterostomy:

1. Hæmorrhage has occurred in a small percentage of cases, but if due care is exercised at the time of operation in producing hæmostasis there will be no trouble.

2. Vomiting was a troublesome feature after operation in about 10 per cent. of cases in the early days of gastro-enterostomy, but since the adoption of the no-loop method of operation it is practically never met with.

3. Jejunal ulcer occurs in a small percentage of cases after gastro-enterostomy. It is usually situated in the jejunum just beyond the gastro-enterostomy opening. Many cases of recurrence are no doubt due to the use of permanent suture material at the time of operation as the Mayos have shown; but it may occur even in cases where no permanent suture material has been used. The following case illustrates this condition:

Mrs. McB., age thirty-six, operated on five years ago for duodenal ulcer, when a posterior gastro-enterostomy was done. She enjoyed very good health for about four and a half years when she began to suffer from attacks of pain, hyperacidity and vomiting. The pain gradually became more severe and the vomiting more persistent. The attacks were particularly prone to come on at night. Finally the obstruction became almost complete. I gave her a barium meal and *x*-rayed her, and made a diagnosis of jejunal ulcer. She also saw Dr. Halliday who concurred in my opinion that operation should be undertaken as soon as possible. She went into the Nicholl's Hospital on January 1st, 1917, and I operated the following day assisted by Drs. Halliday and Scott. At operation we found an ulcer in the jejunum, about three quarters of an inch in diameter, situated in the jejunum just beyond the gastro-enterostomy opening. We separated the old gastro-enterostomy opening, excised the ulcer and stitched the opening up in such a way as to leave the gut patent, then made a new gastro-enterostomy. She had no vomiting after the operation, the pain subsided and she went home perfectly well on the twelfth day.

Case Reports

TRANSFUSION IN RUPTURED ECTOPIC PREGNANCY

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ON February 10, 1917, the writer was called in consultation by Dr. Homer McLay of Aylmer, Ontario, from whom the following history was obtained:

Mrs. E. V. P., aged thirty-eight, had been seized that morning, at 7 A.M., with severe pain in the right lower quadrant of the abdomen accompanied by marked collapse. She is the mother of a child eight months old, and had menstruated regularly for several months. Her last period began on December 3, 1916.

Dr. McLay saw the patient at 3.30 P.M., and found her in a serious condition, pulse rapid and at times imperceptible, pallor and the other signs of internal hemorrhage being well marked. The diagnosis of ruptured ectopic pregnancy was made.

Owing to the condition of the roads the writer did not see the patient till 10 P.M. Dr. McLay's diagnosis was confirmed, and operative interference was considered imperative. The patient was so weak from loss of blood that it was not safe to open the abdomen. The transfusion of blood was decided upon. This was rapidly carried out, using the Unger method.* Circumstances did not permit using paraffin in the rubber tubing, but sterile albolene was run through the instrument. The father, a robust man of seventy, was the donor, and 960 c.c. of his blood was transfused without any preliminary agglutination tests. The usual phenomena following transfusion occurred, colour returning, respirations becoming slower, pulse dropping in rate and becoming fuller.

Preparations had already been completed for a laparotomy, which was immediately performed, the right tube being removed and abdomen cleared of clots and blood. The convalescence was uneventful, the patient sitting up on the twelfth day.

*Unger, *J. Am. M. Ass.*, 1915, lxiv. 582.

COMMENT

1. The transfusion of blood was life-saving in a case of ruptured ectopic pregnancy.

2. The use of the Unger method in a country farm house indicates the adaptability of this method to circumstances where hospital facilities are not at the command of the surgeon.

3. No preliminary blood examination of the donor and recipient was made in an emergency case with no untoward effects.

DURING the twelve months ending November 30th, 1916, patients to the number of 12,590 received treatment in the Winnipeg General Hospital, the total number of hospital days amounting to 192,990. Four hundred and thirty-six deaths occurred, a percentage of 3·45, or 2·53, if those occurring within forty-eight hours of admission are deducted. The births numbered 583. Over five thousand operations were performed, and the ambulance made 2,858 journeys. In the outdoor clinic 7,131 patients were treated. The year was a satisfactory one, for although the number of patients treated was greater than ever before, the death rate was lower than in any previous year. Additional accommodation for seventy patients has been provided by the enlargement of the Jubilee wing and two floors of this building have been reserved for the use of military patients. The building formerly used as a maid's home has been converted into a pathological building. The Board hopes to be able to add new power and service buildings during the present year, and in the near future to establish a psychopathical and neurological department in the hospital.

Editorial

THE ANNUAL MEETING

THE forty-eighth annual meeting which will be held in Montreal, June 13th, 14th, and 15th, bids fair to be an unqualified success. In spite of war conditions which place many limitations upon the scope of such a meeting, it is confidently expected that both in point of attendance and in the excellence of papers to be contributed, this meeting will be in no way behind former gatherings of the Association. The members of the profession in Montreal are looking forward to welcoming a large number of their brethren from all parts of the Dominion. It is the intention to publish a complete preliminary programme some time about the middle of May so that we will here only indicate in a general way an outline of the proceedings on each day of the meeting.

On the morning of the first day there will be a general session of the Association, after which luncheon will be served to the members in the College building, where all the meetings are to be held. For the convenience of the members, and in order to save time, it is the intention of the committee of arrangements to serve luncheon to the members on each of the three days. In the afternoon there will be meetings of the various sections, and in the evening the address in public health, by Dr. Charles H. Hastings, of Toronto. This meeting will be open to the public, the subject being, "The national importance of public health."

On the second day, sections will meet during the first part of the morning, and at eleven-thirty the address in medicine will be delivered. The Association is fortunate in having Dr. Theodore C. Janeway, of Baltimore, to give this address. In the afternoon, following a meeting of sections, there will be a symposium on the subject of "Suppurative

conditions in the lower respiratory tract". This will be participated in by the sections of medicine, surgery, pathology and *x*-ray, and prominent speakers in each of these departments are being secured. In the evening the annual dinner will be held, and on this occasion, the President, Dr. Blackader, will deliver his address.

The address in surgery will be given on the morning of the third day following upon the usual meetings of sections. This address will be given by Dr. F. J. Shepherd, of Montreal. In the afternoon of this day the sections will meet again.

We have received from Dr. R. W. Powell, of Ottawa, intimation that the Canadian Medical Protective Association will hold its meeting at the time of the meeting of the Association. Dr. Powell points out that as no meeting has been held for two years, there will be some very important business to be brought before the members. The hour of the meeting will be published in the preliminary programme.

In addition to the scientific attractions of the meeting there will probably be some opportunity afforded for a visit to the large hospitals of the city. We can assure our members that a hearty welcome will be extended to those who may be able to come to Montreal for this purpose for the two days preceding the meeting, or to remain for the day following.

HELIOTHERAPY

SINCE the appearance in 1909 of Rollier's[1] article upon the treatment of surgical tuberculosis by general heliotherapy, based upon results obtained at Leysin, there has been a gradually awakening interest and belief in the curative action of the sun's rays and their value as an adjuvant in the treatment of these conditions.

So far there would appear to be no unanimity of opinion

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[1] Rollier: "Heliotherapy in Mountain Climate." *Bull. de l'Académie de Médecine*, Paris, November, 1909.

"Heliotherapy of Tuberculosis with special reference to the surgical forms." *Ergebnisse der Chirurgie und Orthopädie*, 1913, Bd. 7.

as to what rays are most beneficial; but the results more recently obtained would seem to discredit the primary assumption that the rays at high altitudes were superior, in quality, quantity, and curative effect, to those in the lowlands.

General heliotherapy is to be preferred to local heliotherapy for the following reasons: (1) because local foci are, so to speak, merely the outward expression of generalized infections; and (2) because successful general insolation is followed by extraordinary tonic effects. There is an increase in the red blood cells and in their hæmoglobin content, and in typical cases the leucocyte count rises to about 13,000. From the results obtained in the treatment of pulmonary tuberculosis by general heliotherapy at the Mesnaliens Sanatorium in Norway, Holmboe[2] affirms that, while it is too early to define the direct influence of sun baths upon such lesions, they unquestionably have a very stimulating effect upon the appetite; and that the improvement in the subjective health of the patient is so striking that it must be considered of great significance.

The local effects of general heliotherapy are best shown in sinus cases, in which healing is greatly accelerated, with the formation of movable cicatrices, that show less tendency to keloid formation than is usually observed. Rollier[1] claims that in joint affections mobility and not ankylosis is to be looked for, but this is a matter of controversy.

In city hospitals, where there are no facilities for carrying out general heliotherapy, the local exposure of lesions, especially bone and joint sinuses and superficial tuberculous ulcers, is attended with remarkable results. The writer has had experience of cases of tuberculous skin ulcers following the spontaneous evacuation of tuberculous glands, which obstinately resisted local treatment where dressings and bandages were applied, but which, after a surprisingly short period of daily exposure to sunlight, healed promptly and with com-

[2] Holmboe: "Heliotherapy for Tuberculosis in Norway." *British Journal of Tuberculosis*, July, 1916.

paratively little scarring. In general hospitals, too, such cases as those cited by the author of the original contribution in this issue, especially cases of tuberculous peritonitis, receive distinct benefit from exposure of the abdomen to the sun's rays. The therapeutic value of sunlight in the treatment of septic wounds and of pyogenic infections of bones, with sinus formation, has been attested by Grangé,[3] and is worthy of further trial.

Careful observations upon general insolation have led to certain broad generalizations:

1. That the treatment is of value only when it produces pigmentation.

2. That pigmentation alone is not sufficient to produce improvement, but is a medium through which improvement is obtained.

3. That in pigmented patients who show improvement the degree of improvement bears a certain relationship to the amount of pigmentation.

4. That in patients who do not pigment, especially in sandy-haired patients in whom there appears to be a lack of pigmenting power, the ultimate prognosis is not so good as in patients who do pigment.

Campbell[4] of Memphis states that, contrary to his earlier impressions, negroes respond to heliotherapy equally as well as whites, and undergo further pigmentation.

Gauvain[5] contributes the interesting observation that patients who have not pigmented, even though the disease appears to be quiescent, often develop later lesions or abscesses elsewhere; and that the successful aspiration of these abscesses or the healing of local lesions may in this hitherto non-pigmenting class be followed by the acquirement of pigmenting

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[3] Grangé: *Paris Médical*, December 25th, 1915.

[4] Campbell: "General Heliotherapy in the Treatment of Bone and Joint Affections." *American Journal of Orthopedic Surgery*, April, 1916.

"Bone and Joint Affections treated by Heliotherapy." *American Journal of Orthopedic Surgery*, January, 1917.

[5] Gauvain: "The Practical Employment of Heliotherapy in Surgical Tuberculosis occurring in Children." *British Journal of Tuberculosis*, July, 1916.

power. Pigmentation is thus often an excellent prognostic sign.

Patients should be carefully supervised, especially while pigmentation is being induced. A useful table of instructions for nurses and others in the conduct of sun treatment is appended to Gauvain's[5] article. Holmboe[2] also gives some very instructive comparative tables of temperatures taken with the ordinary mercurial thermometer and the so-called "insolation" thermometer, which records only the heat of the sun's rays, regardless of the heat of the surrounding air.

While those who have had experience with heliotherapy are convinced of its value, they lay stress upon the fact that it must not be considered as a treatment in itself, but rather as an adjuvant; and that the orthopædic and other appliances which are being used to overcome and prevent deformities, should during the period of insolation be frequently supervised and carefully re-adjusted.

NITROUS OXIDE-OXYGEN ANALGESIA IN OBSTETRICS

THE use of nitrous oxide and oxygen as an analgesic and anæsthetic to alleviate the sufferings of childbirth is not new, but it has become the vogue to a large extent on this continent since the general abandonment of the so-called "twilight sleep".

The general use of morphin-scopolamin was largely due to public demand, and was to a certain extent hysterical, being exploited in the lay press and discussed at women's meetings from one end of the country to the other.

It proved a disappointment in its results, for, according to conservative estimates, in only about one-third of cases was it entirely successful; in one-third of cases it was of no benefit, and in the remaining cases it was actually more of a curse than a blessing.

Nitrous oxide and oxygen, on the other hand, appears to

have a very useful future in this field. The very drawbacks to its use in general surgery make its strong points as an analgesic agent for obstetrical use. It does not produce great relaxation of the muscles, rather stimulating the pains of labour by removing inhibitory fear from the patients. Also, it is possible to oxygenate the patient thoroughly, because the administration is intermittent, only lasting for the period of each pain, so that no cyanosis or excess of carbon dioxide need be produced; and, if produced, it can be corrected at once by giving pure oxygen. It has the inestimable advantage over the alkaloid method of continuous application and quick elimination. Further, it may be used in practically every patient who presents herself, without the necessity of careful selection of cases, because it has practically no toxic action.

First used in Russia in the eighties with success, it was lost sight of for a long time; but in this country and in the United States it has been employed a great deal for the last five years with good results.

There are certain objections to the method, which may be overcome to a large extent as it becomes more popular. Its cost is rather prohibitive for the charity patient, running around seven dollars an hour in this country. Besides, considerable training and practice in its administration are absolutely necessary to success. Another essential is a good apparatus. There are a number of machines on the market to choose from. The obstetrician or anæsthetist will do well to choose one which allows of the addition of pure oxygen to nitrous oxide in any quantity, particularly at the end of each pain, also at the completion of childbirth, during the very last part of which he has probably produced complete anæsthesia and some accompanying cyanosis.

On March 27th, last, four physicians were brought before the police court at London, Ontario, to answer to a charge of unlawfully prescribing intoxicants in evasion of the Ontario

Temperance Act. In one case it was stated that no less than seven hundred and eighteen prescriptions for intoxicating liquor had been given by the doctor in question since September 16th, 1916. Such a number of prescriptions for bottles of liquor would appear to be excessive, and in the opinion of most members of the profession, there is very little difference between pandering to a man's appetite for drink and giving morphia or cocaine to a drug habitué.

An Order-in-Council has been passed by the government which provides for the issuance of war badges. The badges will be of four orders and will be distributed to (a) men honourably discharged after actual service at the front; (b) those honourably discharged after six months' service in the Canadian Expeditionary Force, or for less than six months' service, provided that the discharge was by reason of some disability due to military service; (c) those honourably discharged after less than six months service in the Canadian Expeditionary Force, or those who have volunteered to enlist but have been rejected as medically unfit; (d) those who have volunteered to enlist but whose services have been refused on the ground that they would be more useful to the State in their actual occupation than if they enlisted. No badge will be issued to men discharged by reason of the cessation of working pay, if they are still fit for overseas service. The order provides for the free issue of these government badges and makes it illegal to manufacture, sell, purchase or wear any other badge purporting to be for such purposes as are provided for in the Order-in-Council, and any infraction of the order will be punished by a fine not exceeding five hundred dollars or by imprisonment not exceeding six months.

In a recent debate in the British Columbia House of Assembly, Dr. J. W. McIntosh, of Vancouver, referred to the unsatisfactory way in which problems connected with

public health were dealt with in the province of British Columbia. In Vancouver, the death rate from tuberculosis, instead of decreasing, has increased by 43 per cent. during the period elapsing between the years 1904 and 1914, and in Victoria during the same period it has increased by 58½ per cent.; and in Vancouver 15 per cent. of all deaths are due to tuberculosis. Dr. McIntosh contrasted these figures with those for the province of Ontario, where the death rate from this disease has diminished by as much as 40 per cent. during the period mentioned. The speaker also pointed out the importance of segregation and objected to the methods in vogue in the hospitals where advanced and incipient cases are often treated side by side. He thought that incipient cases only should be admitted to the Tranquille Sanatorium. The late government had given generous aid to the hospitals and had provided for the treatment of advanced cases of tuberculosis, but such cases ought not to be admitted to the common wards of a hospital. A good deal had been accomplished in the province by the employment of the tuberculin test in cattle and the examination of milk, and within the next three or four years the cattle of British Columbia should be free from infection and thus a grave menace to the health of the public generally, and children particularly, would be removed. Dr. McIntosh thought that all meat should be inspected and that it was only a question of time before the Workmen's Compensation Act would be extended to include sickness as well as accident. In reference to the present system of education, he said that in England the trend of opinion was strongly in favour of vocational education. The present system gave a superficial knowledge of many subjects. He thought that education should be along the lines of development in the province; for instance, the fishing industry in those parts of the British Columbia where fishing was the principal occupation of the people.

Canadian Medical Association

ANNUAL MEETING, MONTREAL, JUNE 13TH TO 15TH

PRELIMINARY PROGRAMME (APRIL, 1917)

ADDRESS in Medicine: Theodore C. Janeway, M.D., Sc.D., Professor of Medicine, Johns Hopkins Hospital, Baltimore.

Address in Surgery: F. J. Shepherd, M.D., LL.D., F.R.C.S., Montreal.

Address in Public Health and Preventive Medicine: Charles J. Hastings, M.D., Medical Officer of Health, Toronto.

SECTION OF MEDICINE

J. S. Wright, Edmonton: "The sociologic and economic aspect of tuberculosis."

Robert C. Paterson, Saranac Lake: "Tuberculin, its nature and action."

J. Roddick Byers, Ste. Agathe des Monts: "Vocational training in the treatment of pulmonary tuberculosis."

James Third, Kingston: "Tuberculosis, a national problem."

Hugh M. Kinghorn, Saranac Lake: "Rest and exercise in the treatment of pulmonary tuberculosis."

W. B. Kendall, Gravenhurst: "Clinical report of one hundred cases of artificial pneumothorax."

W. Goldie, Toronto: "Neurasthenia as a symptom complex."

E. H. Mason, Montreal: The value of the atropine test in the diagnosis of typhoid fever."

E. Grenier, Montreal: "Artificial pneumothorax in the treatment of pulmonary tuberculosis."

W. G. Hepworth, Steveston, British Columbia: "A primary attack of pulmonary asthma in a pregnant multipara."

Maude E. Abbott, Montreal: "On the determination of basal metabolism by indirect calorimetry."

Walter M. Boothby, Rochester, Minn., and Maude E. Abbott, Montreal: "On the basal carrying tension of the blood for carbon dioxide in congenital cardiac lesions."

H. A. McCallum, London: (To be announced.)

G. G. Campbell, Montreal: "Use of liquid air treatment of skin diseases."

Thomas McCrae, Philadelphia: "Some of the medical problems of gall-bladder disease."

J. S. Graham, Toronto: "Observations in the removal of septic foci in cases of chorea."

G. S. Mundie and I. J. Erickson, Montreal: "Cerebro-spinal lues."

I. J. Erickson and E. H. Mason, Montreal: "Blood pressure and kidney function findings in orthostatic albuminuria."

W. H. B. Aikins, Toronto: "Radium in the treatment of tuberculosis of the skin."

W. F. Hamilton, Montreal: "Pancreatic cyst, three cases."

H. A. Bray, Ray Brook, New York: "Apical breath-sounds in early tuberculosis."

A. McPhedran, Toronto: "Prognosis in diseases of the heart."

A. G. Morphy, Montreal: "The diagnosis of disseminated sclerosis."

Helen MacMurchy, Toronto: "Care and treatment of the feeble minded."

J. Kaufmann, Montreal: "Significance of an abnormal cardiographic T-wave in relation to high diastolic pressure and low pulse pressure."

J. Kaufmann and H. H. Cheney, Montreal: "Pneumothorax; a clinical and radiological study.

Section of Surgery

James McKenty, Winnipeg; "Duodeno-jejunostomy; its indications and technique."

Robert E. McKechnie, Vancouver: "The action of wood alcohol in surgical cases."

W. E. Gallie and E. L. Robertson, Toronto: "The transplantation of bone."

Charles K. P. Henry, Montreal: "The surgical treatment of pernicious anæmia."

W. A. Lincoln, Calgary: "Spontaneous rupture of the renal artery."

J. A. Nutter, Montreal: "Arthrodesis of the hip joint and its indications."

G. S. Mundie, Montreal: "Ionization in the treatment of stiff joints."

R. Tait McKenzie, Philadelphia: "On the treatment of muscle and joint contractures by physical methods."

J. E. Lehmann, Winnipeg: "Some observations on mutilating traumatism of the upper extremity."

F. N. G. Starr, Toronto: "The radical cure of hernia."

D. E. Robertson, Toronto: "Empyema."

Roscoe Graham, Toronto: "A study of Meckel's diverticulum."

James Cotton, Toronto: "A demonstration of the new ether."

D. W. MacKenzie, Montreal: "Vesical symptoms in renal disease."

N. H. Beal, London: "Abdominal surgery as an aid in the treatment of pulmonary tuberculosis."

Lieutenant-Colonel F. G. Finley, B.E.F.; "Trench nephritis."

Major S. Aylwin Smith, B.E.F.: "Technique of nerve suture."

Major G. Peat, B.E.F.: "The effect of gassing."

Major John Meakins, B.E.F.: To be announced.

Major A. W. W. Ellis, B.E.F.: To be announced.

Captain John Parry, B.E.F.: "Treatment of injuries of peripheral nerves."

Lieutenant-Colonel C. B. Keenan, C.A.M.C.: "Bone grafting."

Combined Sections

DISCUSSION ON "SUPPURATIVE CONDITIONS IN THE LOWER RESPIRATORY TRACT"

Medical: (To be announced.)

Surgical: E. M. von Eberts, Montreal.

Pathological: J. J. MacKenzie, Toronto.

X-ray: W. A. Wilkins, Montreal.

X-Ray Section

H. H. Cheney, Montreal: "The use of *x*-ray in gastro-intestinal diagnosis."

F. S. Pepperdene, Toronto: "Treatment of diseases with *x*-rays."

W. A. Stenning, Sherbrooke: "Duodenal ulcer."

Captain J. F. Morgan, C.A.M.C.: "*X*-ray at a base hospital in France."

Captain A. Howard Pirie, C.A.M.C.: "The inefficiency of the modern German shrapnel ball."

W. A. Wilkins, Montreal: "Pulmonary abscess."

H. M. Tovell, Toronto: "The importance of the *x*-ray examination in the diagnosis of gastric carcinoma."

J. E. Panneton, Montreal: "The *x*-ray treatment of fibroma."

G. E. Richards, Toronto: "The Roentgen diagnosis of chronic appendicitis."

The work of this section will also include a visit to the *x*-ray departments of the Montreal General and Royal Victoria Hospitals. There will be the usual interesting display of plates.

Section of Obstetrics and Gynæcology

G. G. Copeland, Toronto: "Blindness in the new-born."

G. S. Cameron, Peterborough: "Unusual complication of pregnancy."

G. S. Cameron, Peterborough: "Cardiac vascular disease in fibromyomata."

S. P. Ford, Norwood, Ont.: "An obstetrical experience of thirty-five years."

J. Duncan, Montreal: "Induction of labour."

J. R. Fraser, Montreal: "Pyelitis in pregnancy."

F. A. L. Lockhart, Montreal: "A note on the use of the stem pessary in dysmenorrhœa."

L. deL. Harwood, Montreal: "Drainage in pelvic surgery."

B. P. Watson and W. A. Scott, Toronto: "Analysis of clinical types of puerperal sepsis, with special reference to prognosis and treatment."

G. Hall, Montreal: "A few prescriptions."

D. Patrick, Montreal: "Treatment of sterility by intubation."

Section of Ophthalmology and Oto-Laryngology

D. J. Gibb Wishart, Toronto: "Remarks upon the treatment of ozœna by means of polyvalent vaccines, after Horn."

Lieutenant-Colonel S. Hanford McKee, C.A.M.C.: To be announced.

A. Bramley Moore, Montreal: "Injuries to the eye caused by breaking of eyeglasses."

F. T. Tooke, Montreal: "Complications of senile cataract extraction."

W. G. M. Byers, Montreal: "Surgical treatment of glaucoma with special reference to the more recent operations in the field."

H. D. Hamilton, Montreal: "Retro-pharyngeal abscess."

George H. Mathewson, Montreal: "Damage caused to the eye by strong light."

J. E. Hett, Kitchener, "Focal infection of the tonsils."

R. S. Minnes, Ottawa: "Report on two cases of acute mastoiditis following measles with thrombosis of (a) lateral sinus, (b) jugular bulb."

W. G. Putnam, Yarmouth: "Some dislocations of the crystalline lens."

J. Rosenbaum, Montreal: "Congenital bilateral anophthalmos."

SECTION OF PUBLIC HEALTH

D. Boucher, Montreal: "Teaching of hygiene; its necessity."

P. H. Bryce, Ottawa: "Why federal legislation is necessary in order that venereal diseases may be effectively dealt with in Canada."

W. S. McCullough, Toronto: "Medical examination of immigrants."

E. Pelletier, Montreal,: "How to organize effectively public health service in rural municipalities."

M. M. Seymour, Regina: "Hospitals in rural districts."

E. Nadeau, Quebec: "Rational town planning."

J. E. Dubé, Montreal: "The anti-alcoholic war and the medical profession."

J. A. Baudouin, Lachine, Que.: Sanitary records of houses."

P. H. Bryce, Ottawa: "How a medical health officer can become a co-operative social force in rural districts."

G. G. Melvin, St. John: "Medical inspection of schools."

W. H. Hattie, Halifax: "Terminal disinfection."

T. R. Adams, Ottawa: "The public health aspects of town planning."

Symposium on the Teaching of Hygiene

Speakers: Dr. S. B. Boucher, F. B. Jones, Montreal; J. G. Fitzgerald, Toronto; M. A. H. Mackay, Halifax.

Symposium on Venereal Diseases

LABORATORY SECTION

E. H. Mason, Montreal: "On the functional diagnosis of kidney disease."

Louis Gross, Montreal: "Reconstructions of circulation in the kidney and their bearing on the pathology of the organ."

Maude E. Abbott, Montreal: "The Haldane portable gas analysis apparatus for the clinical estimation of carbon dioxide and oxygen in the determination of acidosis and basal metabolism."

D. D. MacTaggart, Montreal: "Medical jurisprudence in civil law."

A. Vallée, Quebec: "Multiple infarcts of the spleen in malignant endocarditis, rupture of the spleen and peritonitis."

S. J. S. Peirce, Winnipeg: "Wassermann chart with some notes towards standardization of the Wassermann technique."

Maude E. Abbott, Montreal: "Development of the heart in explanation of certain congenital cardiac lesions."

C. T. Crowdy, Montreal: "On hypernephromata and renal cancers."

Henry Odland, Montreal: "Trinitrotoluene poisoning."

A. A. Bruère, Montreal: "On a method of estimating the amylase of urine."

Horst Oertel, Montreal: "Certain factors influencing the production of jaundice."

A. A. Bruère, Montreal: "On the value of preserved alexin (guinea pig serum) in complement fixation tests."

V. J. Harding and E. H. Mason, Montreal: "The estimation of chloride in blood."

William Boyd, Winnipeg: "Acute adrenal insufficiency."

D. G. Revell, Edmonton: (To be announced.)

Exhibition of specimens.

Military Section

Several papers have been promised which will be found for the present under the Surgical Section. The chairman of the Military Section is assured of a sufficient number of papers to make this part of the programme a success from every standpoint.

RAILWAY RATES

The usual reduced rates have been arranged on all the Canadian roads terminating in Montreal. These special rates may be obtained by doctors attending the meeting, and by members of their families accompanying them.

In order to take advantage of these rates it will be necessary for the physician when starting, first, to purchase a single first-class ticket (which must cost not less than 50c.) to place of meeting, and second, to obtain from his ticket agent a standard certificate properly filled in and signed by the latter. This must be presented to the General Secretary of the Association when registering at the meeting. It will be filled in by him and viséd by a special agent of the transportation companies, who will attend for this purpose on the 14th and 15th, and who will collect the sum of 25c. for each certificate examined. The presentation of this form properly filled in and viséd will entitle the holder to a return

ticket to his home either free of charge or at two thirds, or one third, the regular first-class fare, depending on the number attending the meeting.

From points east of Fort William, Ontario, tickets must be bought between June 9th and June 15th, inclusive, and the return journey may be made up to and including June 19th, 1917. From points west of Fort William, and Armstrong, Ontario, tickets must be bought between June 8th and 11th, inclusive; from British Columbia between June 6th and 9th, inclusive. Certificates for the return journey to the west will be honoured at Montreal up to and including June 19th, 1917. A thirty-days' extension may be secured by the additional payment of one third the full fare from place of meeting to starting point. Stop-overs will be granted holders of these extended tickets.

The trip to Montreal by boat, particularly at this time of the year, is very delightful, and we would point out to our members that the above special rates apply as well to the boats of the Canada Steamship Lines, as to the railways.

It is hoped that our members will note that it is important to fulfil all the conditions mentioned above, and it should be emphasized that the greater the number attending, the less will be the cost of railway transportation. Any member requiring special information with reference to transportation is requested to write to Dr. H. B. Carmichael, Chairman of Transportation Committee, General Offices, Grand Trunk Railways, Montreal.

HOTELS

Montreal has many first class hotels, and the majority are within easy reach of the New Medical Building, where all the meetings will be held. The following are the principal ones with their rates.

Windsor, Windsor St. (near C.P.R. depot), single $2.00 up; double $3.50 up; with bath $1.00 additional.

Ritz-Carlton, cor. Sherbrooke and Drummond, single, with bath, $2.00 up; double, with bath, $5.00 up.

Corona, Guy St., single, $1.50, double, $2.50; with bath $1.00 additional.

Queen's, Windsor St. (near G.T.R. depot), $1.50 and $2.00, (with bath $2.50). American plan, $3.00 and $3.50 (with bath, $1.00 additional).

Welland, McGill College Ave., $1.00 and $1.25; American plan, $2.50 and $3.00.

Miscellany

Book Reviews

THE PRACTICAL MEDICINE SERIES: COMPRISING TEN VOLUMES ON THE YEAR'S PROGRESS IN MEDICINE AND SURGERY. Under the editorial charge of CHARLES L. MIX, A.M., M.D., professor of physical diagnosis in the Northwestern University Medical School. Vol. VIII, MATERIA MEDICA AND THERAPEUTICS, edited by GEORGE F. BUTLER, Ph.G., A.M., M.D., emeritus professor of therapeutics, Chicago College of Medicine and Surgery. PREVENTIVE MEDICINE, edited by WM. S. EVANS, M.A., M.D., L.L.D., Ph.D., professor of preventive medicine, North Western University Medical School. Series 1916. Publishers: The Year Book Publishers, 327 S. La Salle Street, Chicago. Price, $1.50 net. Price of the series of ten volumes, $10.00.

This little work puts before the profession the lastest advances in Therapeutic and Preventive Medicine in very readable form. One is perhaps struck with the space devoted to "Extracts of Animal Organs and Serums", but the rapid advances here require all the attention given. That portion devoted to Preventive Medicine is practical and should be very valuable to the general practitioner. The opening chapter on the "Physician and Public Health Work" is good.

DISEASES OF CHILDREN. By EDWIN E. GRAHAM, A.B., M.D., professor of diseases of children in the Jefferson Medical College. 902 pages with 89 engravings. Publishers: Lea & Febiger, Philadelphia and New York, 1916. Price $6.00 net.

We have carefully examined this new text-book on diseases of children and can congratulate the author upon having most satisfactorily accomplished his aim to present modern views in such a way as to render them immediately available to the busy practitioner. Throughout the volume the anatomy and physiology of the child are carefully considered and while pathology is given

due consideration, symptoms, diagnosis and treatment, claim the chief attention. The subject of infant feeding is very fully discussed and the modification of cow's milk to suit the digestive capacity of the infant carefully explained. Numerous formulæ are included to illustrate the calculation of caloric and percentage feeding. We have read with pleasure the chapters devoted to infant mortality, heredity and environment, dentition, puberty, fresh air; and the article on poliomyelitis is an excellent one. The author expresses his views clearly and well. We welcome this new arrival to our shelves. We have consulted it on many occasions and can strongly recommend it as modern, practical and thorough.

MENTALLY DEFICIENT CHILDREN, THEIR TREATMENT AND TRAINING. By G. E. SHUTTLEWORTH, B.A., M.D., fellow of King's College, London; and W. A. POTTS, M.A., M.D., medical officer to the Birmingham Committee for the care of the mentally defective. Fourth Edition, 284 pages. London: H. K. Lewis & Co., Ltd., 136 Gower St., W.C. Philadelphia: P. Blackiston's Son & Co., 1916. Price, 7/6 net.

It is a matter of great regret that in Canada so little has been done towards the training of mentally deficient children. In this matter we are much behind many countries in Europe and also many of the States in the Union. We have much pleasure therefore in recommending this work to those physicians who are interested in this class of case, as being very practical and suggestive. It is the fourth edition, and has been very carefully revised and brought well up to date and should be in the hands of every physician who has many children under his charge. It is one of the best and most practical and at the same time most readable text-books on this subject.

THE CONTROL OF HUNGER IN HEALTH AND DISEASE. By ANTON J. CARLSON. University of Chicago Press, Chicago, 1916.

THE investigation of the bodily functions, either separately or as a whole, by the usual methods in vogue in the physiological laboratory is seriously limited, because objective phenomena alone can, as a rule, be studied. Such physiological processes as involve subjective experiences on the part of the observed animal, cannot be satisfactorily investigated unless at least some of the fundamental experiments are performed on man himself. The

significance of the sensations of hunger and appetite, and the relationship of these sensations to the processes of digestion, serve as excellent examples of the case in point, and it must be considered as marking a distinct contribution to the development of physiological and therefore of clinical knowledge that Carlson and his collaborators should have been in a position to publish, in the present volume, an account of accurate and well-conceived observations made on man. The opportunity to do this presented itself when a young man having a permanent gastric fistula offered his services as an assistant in Carlson's laboratory. Starting with observations on the relationship between the movements of the stomach and the hunger sensations in this man, Carlson then extended the investigations to include observations upon normal and pathological individuals and upon animals under various experimental conditions. It was found that the normal empty stomach is continually undergoing changes in muscle tone, and that when these changes are pronounced, a dull sensation of hunger may be experienced. Actual hunger pains, however, occur only when periodic strong contractions become superimposed on the smaller tonic contractions. Similar hunger pains could be produced experimentally by causing the stomach to contract as a result of a sudden distension of the walls, thus indicating that the contractions serve as the adequate stimulus for afferent nerve terminations in the stomach walls.

The feeling of satiety following a full meal was found to be independent of the nerves of the gastric mucosa. This sensation is therefore partly psychic, as is also appetite. For example, a sensation of "coming appetite" could be set up by the introduction into the stomach, without excitation of the taste or olfactory nerves, of such substances as alcohol, mustard, pepper, etc. When thus introduced during a hunger period, the substances caused the sense of hunger to disappear and in its place one of anticipation of food, or appetite, to appear. Feeding is an instinct, its performance being prompted by the experience that the hunger pains can in this way be replaced by a sense of pleasure. The hungry babe thus puts everything to its mouth, and Carlson found that, if it be fed, the hunger contractions cease for some two or three hours and then set in again. The question is put as to whether this justifies the practice of some pediatricians of insisting upon long pauses between feeding.

A most interesting account is given of the subjective experiences felt by Carlson and one of his co-workers during a fast of five days.

Numerous experiments were also undertaken to determine the relationship of the nervous system to hunger, and the conditions under which hunger contractions occur, or by which they are inhibited.

The nature of the specific stimulus causing the hunger contractions, whether a hormone or stimuli initiated in the neuromuscular structures present in the stomach walls, is discussed.

Important observations were also made on the composition of the gastric juice, and the relationship of its acid content to various conditions.

We cannot too highly praise this splendid contribution to medical literature. Side by side with the works of Pavlov, Starling, and Cannon, Carlson's book should stand on the bookshelves of every student of digestion.

Books Received

THE following books have been received and the courtesy of the publishers in sending them is duly acknowledged. Reviews will be made from time to time of books selected from those which have been received.

THE PRACTICAL MEDICINE SERIES; COMPRISING TEN VOLUMES ON THE YEAR'S PROGRESS IN MEDICINE AND SURGERY. Under the general editorial charge of CHARLES L. MIX, A.M., M.D., professor of physical diagnosis in the Northwestern University Medical School. Vol. X. NERVOUS AND MENTAL DISEASES. Edited by HUGH T. PATRICK, M.D., professor of neurology in the Chicago Polyclinic, and others. Series 1916. Publishers: The Year Book Publishers, 327 S. LaSalle Street, Chicago. Price, $1.35. Price of the series of ten volumes, $10.00.

A SURGEON IN KHAKI. By A. A. MARTIN, M.D., Ch.B., F.R.C.S., senior surgeon, Palmerston North Hospital, New Zealand. Popular edition, with illustrations. Publishers: Edward Arnold, 41 Maddox Street, London, W. Price 2/6 net.

TRANSACTIONS OF THE AMERICAN SURGICAL ASSOCIATION. Edited by JOHN F. BINNIE, M.D., recorder of the Association. Thirty-fourth volume. William J. Dorman, Philadelphia, 1916.

CATECHISM SERIES. SURGERY, Part I, and Part II, third editions; MATERIA MEDICA, Part I, and Part II, second editions; PHYSIOLOGY, Part I, third edition; PATHOLOGY, Part I, second edition. Publishers: E. & S. Livingstone, Edinburgh. Price 1/3 net per Part.

A MANUAL OF PHYSICAL DIAGNOSIS. By AUSTIN FLINT, M.D., LL.D., late professor of the principles and practice of medicine and of clinical medicine in Bellevue Hospital Medical College. Seventh Edition, revised by HENRY C. THACHER, M.S., M.D., associate in medicine in the College of Physicians and Surgeons of Columbia University. 372 pages with illustrations. Publishers: Lea & Febiger, Philadelphia and New York, 1917. Price $2.50.

CATARACT: Senile, Traumatic and Congenital. By W. A. FISHER, M.D., professor of ophthalmology, Chicago Eye, Ear, Nose, and Throat College. Published by, Chicago Eye, Ear, Nose, and Throat College, 1917. Price, $1.50.

EMERGENCY SURGERY. By JOHN W. SLUSS. A.M., M.D., F.A.C.S., associate professor of surgery, Indiana University School of Medicine. Fourth edition, revised and enlarged. 827 pages with 685 illustrations, some of which are printed in colours. Publishers: P. Blackiston's Son & Co., 1012 Walnut St., Philadelphia. Price, $4.00 net.

CLINICAL BACTERIOLOGY AND HÆMATOLOGY, for Practitioners. By W. D'ESTE EMERY, M.D., B.Sc., director of the laboratories and lecturer on pathology and bacteriology. Fifth edition, 303 pages. Publishers: H. K. Lewis, & Co., Ltd., 136 Gower Street, London, W.C., 1917.

THE JOURNAL OF UROLOGY (Experimental, Medical, Surgical). Edited by HUGH HAMPTON YOUNG. Volume I. Published bi-monthly by Williams & Wilkins Company, Baltimore. Price, $5.00.

PRACTICAL URANALYSIS. By B. G. R. WILLIAMS, M.D., director, Wabash Valley Research Laboratory. With illustrations. Publishers: C. V. Mosby Company, St. Louis, 1916. Price, $1.25.

Obituary

WILLIAM MORRISON MacKAY, M.D.

Dr. MacKay, whose death occurred at Edmonton, on the morning of February 25th, has been described as the doyen of the medical profession of the wast. He was one of the first practitioners to go out to the Mackenzie district in the days when the only settlements of white people were the training posts of the Hudson Bay Company. Born in Stirling, Scotland, in 1836, he was educated at Edinburgh and intended to became an engineer. An accident occurred, however, by which he lost the sight of an eye and during the time spent in the infirmary as a result of this, he determined to take up the profession of medicine. In 1858, he received the degree of M.D. from the University of Edinburgh. After practising for a few years, Dr. MacKay joined the Hudson Bay service and on June 13th, 1865, sailed from London for Canada. He landed at York Factory which at that time was inhabited by about sixty white people, and there he spent three years serving as doctor to the post. In the summer of 1868, he went to Fort Simpson in the Mackenzie district and from that centre he made many long excursions—in winter usually by dog sleigh—to minister to the Indians during the frequent outbreaks of infectious disease. The succeeding years were spent at various trading posts, first as doctor, then as doctor and trader, until in 1882 he was placed in charge of Fort Dunvegan, where he stayed for seven years. In 1889, he went to Fort Chipweyan and, ten years later, to Edmonton where he lived in retirement for nearly twenty years.

DR. NEWTON R. COLTER

The death of Dr. Colter occurred at Fredericton, New Brunswick, on April 7th, after an illness of only two days' duration. On Thursday, April 5th, Dr. Colter attended the funeral of his brother, Mr. James Colter, and was then apparently in good health; he contracted a cold, however, which quickly developed into pneumonia from which he succumbed early on Saturday morning. He was born in Sheffield, New Brunswick, in July, 1845, and was educated at Mount Allison University. From there he went to Harvard and to Queen's College, London, where he received his medical degree.

He practised for a time at Woodstock. In 1891, he entered the House of Commons as Liberal member for the County of Carleton, but was defeated by Mr. F. H. Hale at the next general election. In August, 1897, Dr. Colter was appointed post office inspector for the province of New Brunswick, a position which he held until April 1st, of this year, when he retired.

Dr. Garry Langstaff, who died at Thornhill, Ontario, on March 17th, was a well-known practitioner in York County. He was born at Thornhill in 1860 and practised in Brooklyn, New York, for about twenty-five years, returning to his native village a few years ago. Dr. Langstaff leaves a widow and infant daughter.

Dr. Jacob Zeilinski, who died at Toronto on March 22nd, was in the eightieth year of his age. He was a German by birth, and came to Canada in 1865. He practised at Maple, Kleinburg, and Toronto.

Dr. Charles A. Fisher, who died at Detroit, Michigan, on March 25th, was a son of Lieutenant-Colonel C. E. H. Fisher, of London, Ontario, and a graduate of the medical college of Western University. He was in the thirty-eighth year of his age and had been in practice at Detroit since 1902.

News

MARITIME PROVINCES

It was decided at a recent meeting of the Halifax City Council that the Board of Health should be empowered to draft by-laws to make overcrowding a criminal offence and to prevent landlords from collecting rent from occupants of premises declared by the board to be in an insanitary state.

ONTARIO

Dr. J. G. Wright has been appointed medical superintendent of the Kingston General Hospital. Dr. Wright was for some time on the staff of the Rockwood Hospital for the Insane.

DR. J. D. CURTIS, of St. Thomas, has been appointed to the surgical staff of the Workmen's Compensation Board, Toronto. Dr. Curtis served for a year in the Royal Army Corps, with the military rank of captain.

THE plans have been prepared for the new St. Mary's Hospital which is to be built at Kitchener. It will consist of a main building of three storeys and a nurses' home for the Sisters, and, it is hoped, will be completed before the end of the present year.

ARRANGEMENTS have been made to increase the accommodation in the Galt hospital by converting the present dining room into a children's ward. It is also proposed to provide additional accommodation for the nurses, probably by building another cottage.

THE following is the list of cases of infectious and contagious disease reported in Ontario during the month of March: smallpox, 13 cases; scarlet fever, 260 cases, 6 deaths; diphtheria, 356 cases, 27 deaths; measles, 160 cases, 2 deaths; whooping cough, 112 cases, 4 deaths; typhoid fever, 40 cases, 9 deaths; tuberculosis, 182 cases, 109 deaths; cerebro-spinal meningitis, 15 cases, 10 deaths.

IN the April Bulletin of the Toronto Department of Public Health, Dr. Hastings points out that infant mortality in Toronto has been reduced by more than 30 per cent. since 1914, when the Division of Infant and Child Hygiene was established; and that, whereas in 1910 the death rate among infants was as high as 139 per thousand, in 1916 it was only 91·5 per thousand births.

A BILL was passed at the recent session of the provincial legislature, which provides for an increase in the municipal grant to hospitals. In future municipalities will pay $1.25 a day instead of the $1.00 previously contributed.

QUEBEC

DURING the past few weeks typhoid fever has been very prevalent in certain parts of the province, particularly in the towns on the banks of the Yamaska and Richelieu rivers. In Montreal, Lachine, Farnham, St. Johns, Iberville, St. Hyacinthe, Sorel, Levis, and Sherbrooke a number of cases have occurred, and at Sherbrooke, it is reported that the father, mother, and two sons

of one family all died from the disease within a few weeks of each other.

MANITOBA

It is reported that an offer of a base hospital for service in France has been made to the government by the medical men of Winnipeg.

SASKATCHEWAN

The plans have been prepared for a new isolation hospital to be built at Saskatoon.

The contracts have been let for the sanatorium at Fort Qu'-Appelle and building has been commenced. It will be remembered that it was the intention to build the sanatorium in 1914 but the work was interrupted because of the war.

ALBERTA

In his report for the year 1916, Dr. Whitelaw, the medical officer of health at Edmonton, points out that tuberculosis is increasing in Edmonton and that although the number of deaths from this disease was thirty-five, only thirty-eight cases of tuberculosis were reported during the year. It is evident, therefore, that only a small percentage of the cases that occur are reported to the health authorities. The situation as far as typhoid fever is concerned is more encouraging, only eight cases of the disease being contracted in the city of Edmonton during the year; and of these eight, only one died. No cases of smallpox were reported. Referring to the cases of infantile paralysis, Dr. Whitelaw states: "Considerable public apprehension was caused by the appearance of anterior poliomyelitis here to a greater degree than ever before, though it never at any time became epidemic. It occurred in isolated districts of the city remote from one another, and no case seemed to be distinctly connected with the other so far as could be ascertained. No secondary cases occurred in any family affected, which suggests it is not of as highly infectious a nature as some of the ordinary infectious diseases. In all between July 15th and October 24th, thirteen cases developed, one of which came from the country. Of the thirteen cases, three died, two were left seriously crippled, four less seriously affected, and will eventually show slight evidence of the disease, and four recovered, after some weeks, almost completely the use of their limbs."

The classification of infectious diseases notified during the year was as follows: Measles, 1100; chicken-pox, 589; whooping cough, 130; scarlet fever, 44; diphtheria, 25; erysipelas, 36; tuberculosis, 14; German measles, 1; typhoid fever, 8; anterio poliomyelitis, 12; mumps, 11.

THE population of Edmonton in 1916 is estimated at 53,794; the birth rate was 32·9, and the death rate 9·44 per thousand, the births numbering 1,700 and the deaths, 508. A slight decrease in infant mortality occurred as compared with previous years, and the number of deaths caused by infantile diarrhœa was only sixteen, which was due no doubt to the improved milk supply and the work of the Victorian Order nurse.

A NUMBER of cases of typhoid fever have occurred at Delia and, as a result, no visitors have been permitted to enter the town.

BRITISH COLUMBIA

DURING the year 1916, 645 patients were admitted to the Kootenay Lake General Hospital at Nelson, the average daily cost of maintenance being $1.67 for each patient.

MEDICAL COLLEGES

McGill University

LIEUTENANT CHARLES BURNSBY TINLING, who died of wounds received in the battle of Vimy Ridge, was the son of Mr. C. W. Tinling of Montreal and was in his third year in medicine at McGill University when he enlisted with No. 3 General Hospital. While serving with this unit he rose to the rank of sergeant and subsequently was given a commission in the Canadian Infantry. He was wounded on two occasions. Lieutenant Tinling was born in Hamilton, Ontario, on March 30th, 1893, and graduated in Arts from McGill in 1914.

LIEUTENANT LORNE C. MONTGOMERY, who is reported wounded for the second time, is a third-year medical student at McGill. In the spring of 1915 he enlisted with the McGill Military Hospital and after rising to the rank of sergeant, transferred to the 42nd Battalion. He was born at New Richmond, Quebec, in 1894 and has distinguished himself during his college career both as an athlete and a student of promise.

Queen's University.

A NUMBER of medical students who went overseas with the Queen's Military Hospital have returned to complete their studies. A special course commencing on May 15th, will be given for them this summer.

ARMY MEDICAL SERVICES

THE following Canadian medical officers have been brought to the notice of the Secretary of State for War for valuable services rendered in connexion with the war:

COLONELS: G. S. Rennie, J. W. Bridges, L. Drum, and W. A. Scott.

LIEUTENANT-COLONELS: J. D. Brousseau, W. S. Buell, I. H. Cameron, G. Chambers, J. D. Courtenay, F. G. Finley, D. W. McPherson, F. H. Mewburn, and W. L. Watt.

MAJORS: I. D. M. Baxter, F. C. Bell, R. Bowie, D. A. Clarke, C. E. Doherty, L. E. W. Irving, A. W. Macpherson, J. C. Meakins, C. H. Reason, C. K. Russel, S. A. Smith, T. A. Starkey, R. Wilson, and C. A. Young.

CAPTAINS: M. H. Allen, A. W. Bagnall, C. A. Barager, B. M. Bayley, G. Boutheillier, F. B. Bowman, J. R. Goodall, G. C. Hale, A. J. Lomas, D. W. McGaffin, W. J. MacKenzie, H. C. Mercereau, E. A. Neff, H. Orr, R. W. Thomas, E. L. Warner, and J. H. Williamson.

QUARTERMASTERS AND HONORARY CAPTAINS: J. J. Cawthra and R. Kirkpatrick.

THE list also includes the names of fifty-nine non-commissioned officers and men of the C.A.M.C.

COLONEL HERBERT A. BRUCE, C.A.M.C., of Toronto, has been gazetted Colonel in the Royal Army Medical Corps.

THE *Croix de Guerre* has been awarded by the Commander-in-Chief of the French Army to Captain Arthur C. Armstrong, M.D., of Alexander, Manitoba.

WE are informed on the highest authority that the announcement which appeared in our April number (copied from the *London Gazette*) that Lieutenant-Colonel George E. Armstrong, of Montreal had relinquished his temporary commission in the Canadian Army Medical Corps, is quite incorrect.

PROMOTIONS in the C.A.M.C.: To be Surgeon-General: Colonel J. T. Fotheringham: To be Captain: Lieutenants B. F. Keillor and G. F. Bailey.

THE resignation of Colonel F. W. Marlow as A.D.M.S. of Military District No. 2 has been accepted by the Militia Department.

COLONEL GRAHAM CHAMBERS, C.A.M.C., officer commanding the Ontario Government Hospital at Orpington, is reported to be suffering from nervous breakdown.

LIEUTENANT-COLONEL T. P. BRADLEY, C.A.M.C., of Sarnia, Ontario, who went overseas as medical officer of the 149th battalion, is now second in command of the Convalescent Hospital at Buxton, in Derbyshire, England.

CAPTAIN C. A. PUBLOW, C.A.M.C., of Picton, Ontario, has been appointed adjutant of the Bramshott Military Hospital.

DR. W. T. CONNELL, professor of pathology, bacteriology, and sanitary science in Queen's University, has been appointed to the command of the new Queen's Military Hospital at Kingston, Ontario.

LIEUTENANT R. V. MCCARLEY, M.D., of Vancouver, has left for England to join the Royal Army Medical Corps.

DR. HYMAN LIGHTSONE, R.A.M.C., of Montreal, has been awarded the medal of honour by the French Government in recognition of services rendered in combating an epidemic of typhoid fever in the district of Querrien, Point Noyelles.

THE decoration of the Order of the White Eagle has been conferred upon Lieutenant-Colonel Gow by the King of Serbia. Lieutenant-Colonel Gow is attached to the University of Toronto Base Hospital.

CAPTAIN F. NICOLLE, C.A.M.C., of Toronto, has returned to Canada on account of ill health. Captains R. D. Rankin and R. H. Turnbull, of Toronto, have also resigned their commissions in the Canadian Army Medical Corps because of ill health.

COLONEL A. E. ROSS, C.A.M.C., M.P.P. for Kingston, Ontario, has been appointed Director of Medical Services with the Canadian Forces in France.

LIEUTENANT-COLONEL A. PRIMROSE, C.A.M.C., registrar of the medical faculty of Toronto University, has been gazetted consultant to the Canadian Expeditionary Force with the military rank of Colonel. A few months ago Colonel Primrose returned to Toronto from Salonica but has gone back to England again.

CASUALTIES

Died on Service

MAJOR H. JONES, C.A.M.C.
MAJOR D. B. BENTLEY, C.A.M.C., of Sarnia, Ontario.

Wounded

CAPTAIN W. NORMAN GILMOUR, M.C., R.A.M.C., of Brockville, Ontario, medical officer of the 16th Royal Scots. Admitted to No. 7 Stationary Hospital, Boulogne, with a fractured right humerus.

CAPTAIN W. NORMAN GILMOUR, M.D., South African Medical Corps, son of Mr. W. A. Gilmour of Brockville, Ontario.

CAPTAIN A. B. CHAPMAN, C.A.M.C.

Canadian Literature

ORIGINAL CONTRIBUTIONS

La Clinique, January, 1917:

Du traitement des plaies de guerre du genou	Professor Berard.
La leucorrhée.	G. Juilly.

La Clinique, February, 1917:

Obstetrique pratique	G. Juilly.
Meningite syphilitique et meningite tuberculeuse chez l'adulte	L. Petit.

L'Union Médicale du Canada, January, 1917:

L'enseignement de l'hygiène dans nos pensionnats	Professor Dubé.
Contribution à l'étude de la tuberculine dans le traitement de la tuberculose	D. Masson.
L'héliotherapie	E. St. Jacques.
Honoraires des médecins—honoraires des experts	W. Derome.
La prohibition. Salut de la race	J. Gauvreau.
Végétations adenoides et leur influence sur les facultés intellectuelles des élèves	Dr. Malouf.

The Public Health Journal, January, 1917:

Principles involved in notification of tuberculosis	P. H. Bryce.
The sanitation of railway cars	T. R. Crowder.

Scientific Reports, Royal Victoria Hospital, Montreal, Series B, No. 1, 1916:

Nitrogen metabolism in pernicious anæmia before and after splenectomy	E. H. Mason and J. Kaufmann.
Nitrogen partition of the urine in trinitrotoluene poisoning; a preliminary note.	V. J. Harding and E. H. Mason.
Observations on the Roth modification of the Plesch method of estimating the carbon dioxide tension of the alveolar air as an index of acidosis.	Maude E. Abbott.
Pernicious anæmia, an analytical study	J. Kaufmann.
Tumours of the lung	R. A. Morison.
A case of benign leiomyoma of the œsophagus of unique size.	J. Kaufmann and C. T. Crowdy.
On some hepatic abscesses, a clinical study	E. C. Smith.
Gastritis granulomatosa fibroplastica	G. E. Armstrong.
Ambulatory treatment of surgical tuberculosis with special reference to tuberculin	F. E. McKenty.
An unusually large external myoma of the stomach	W. W. Chipman and C. T. Crowdy.

Pyosalpinx complicating ectopic gestation. J. R. Fraser.
The treatment of glaucoma by Elliott's operation . . . . . J. W. Stirling.
Tuberculous meningitis, with special reference to the tubercle of the choroid and its pathological manifestations . . F. Tooke.
Facial paralysis associated with acute suppurative mastoiditis, cured by operation . . . . . D. H. Ballon.
Contributions to the pathological anatomy of the pancreas:
1. On certain changes in the pancreas in diabetes mellitus and their possible relation to normal pancreatic evolution . . . . . H. Oertel.
2. Regressive and progressive changes in the pancreas, a contribution to post-natal organ evolution in its relation to disease. . . . . H. Oertel. and C. M. Anderson.
The origin of polypi of the gastro-intestinal tract, with special reference to acute inflammatory disturbances as one of the causes . . . . . H. Goldblatt.
An unusual, probably syphilitic splenomegaly . . . . . H. Oertel.
Two cases of rare tumour growths (Angioendotheliomata) showing unusual metastases . . . . . C. T. Crowdy.
Anatomic changes in trinitrotoluene poisoning, with special reference to the nature of the poisoning. . . . H. Odland.

The Canadian Practitioner and Review, March, 1917.

The work of the Antitoxin Laboratory . J. G. Fitzgerald.
Neuroses in returned soldiers . . . . G. W. Howland.
Importance of housing and lodging house inspection . . . . . J. S. Schoales.

The Canadian Journal of Medicine and Surgery, March, 1917:

Arteriosclerosis . . . . . A. W. Holmes.

Dominion Medical Monthly, March, 1917:

Heat as a method of treatment in some forms of cavity carcinoma	J. E. Percy.
The vaginal douche	F. A. Harper.
The occurrence and treatment of pain in locomotor ataxia	E. L. Hunt.

The Canada Lancet, February, 1917:

Carriers of disease	Sir James Grant.
The relation of dyspnœa to acidosis	A. Hunter.
Notes on some cases of uterine fibroids with specimens	J. Milton Cotton.

The Public Health Journal, February, 1917:

Symposium on venereal disease:	
The medical aspect	A. McPhedran.
The public health aspect	C. J. Hastings.
The attitude of the hospital	C. K. Clark.
From the military point of view	Gordon Bates.
Discussion	H. B. Anderson.
The need for sanitary control and a minimum standard of house construction	F. Cartlidge.
Hours of work in relation to efficiency and output	J. W. S. McCullough.

The Canadian Journal of Medicine and Surgery, April, 1917:

Certain diseases of the skin in regard to the public health	D. King Smith.

Medical Societies

AMERICAN SECTION OF INTERNATIONAL ASSOCIATION OF MEDICAL MUSEUMS.—TENTH STATED MEETING

THE American Section of this association held a highly successful meeting at the Academy of Medicine, New York, on April 5th, last. There was a large attendance of members representing the leading medical museums and laboratories of the United States

and Canada. Twenty-one new members were admitted, and the following officers were elected for the ensuing year:

President, Dr. O. Klotz, Pittsburgh, Pa.

1st Vice-President, Dr. W M. L. Coplin, Philadelphia, Pa.

2nd Vice-President, Dr. H. E. Robertson, Minneapolis, Minn.

3rd Vice-President, Dr. A. S. Lamb, Washington, D.C.

Councillors: Dr. A. S. Warthin, Ann arbor, Mich.; Dr. W. M. L. Coplin, Philadelphia, Pa.; Dr. Howard Karsner, Cleveland, Ohio; Dr. M. C. Winternitz, Baltimore, Md.; Mr. R. A. Lambert, New York.

Secretary-Treasurer, Dr. Maude E. Abbott, Montreal.

Assistant Secretaries: Drs. Joseph Kaufmann and Louis Gross, Montreal.

The morning session was devoted chiefly to matters of business and the proceedings were attended by the liveliest interest. In his opening address, the president, Professor Oskar Klotz, of Pittsburgh, remarked upon the circumstances of national interest surrounding the occasion of this meeting in that the declaration of war had just been made and the thoughts of all were concentrated upon the needs of their country and upon the call that was being made to each to do his utmost in the public service. Dr. A. S. Warthin of Ann Arbor pointed out that this society—with other scientific societies—should at once place its services at the disposal of the American Government and moved a resolution that a message to this effect should be sent. The following telegram was accordingly despatched to Washington:

> "The American Section of the International Association of Medical Museums places itself on record as wishing to serve the American Government in the present emergency and offers the services of its workers and resources in its special field of Research in any way the National Committee may suggest."
>
> (Sgd.) Oskar Klotz, President.
>
> April 5th, 1917.

The subject of closer affiliation with the American Museums Association was brought up by Dr. Roy S. Miner of the U.S. National Museum, who attended as its official delegate and who carried formal instructions to do everything possible to promote closer relations between the two societies, and presented a cordial invitation to the American Section of the Medical Museums Association to send a delegate to the annual meeting on May 23rd next. On the motion of Dr. Coplin of Philadelphia, it was resolved that the kind invitation of the American Museums Association for a delegate to this meeting be accepted with thanks and

the closer relationship of the two societies be established by the interchange of proceedings and by participation in the annual meetings of each through the attendance of delegates who shall have all the privileges of these meetings excepting only the right to vote. Dr. Maude Abbott, of McGill University was appointed delegate.

The establishment of a Central Bureau for the permanent preservation of the results of Scientific Research, especially histological material, for purposes of study by scientific workers throughout the country, a matter which had already occupied the attention of this society, in the years 1912–13, was brought forward by Dr. Winternitz, of Baltimore, and committee consisting of Drs. Winternitz, Leob, Haythorne, Karsner, Warthin, and the Secretary ex officio, was appointed to organize such a Central Bureau.

A discussion took place on the clashing of the time of meeting of the four societies now presenting programmes of kindred interest in the city, namely, the American Association of Pathologists and Bacteriologists, the American Section of the Medical Museums Association, the Cancer Society and the American Association of Immunologists. It was felt that in the common interest of all, some sort of federation should be attempted, so that subjects of common interest might be presented to combined audiences, and the president of this association was empowered to confer with the councils of the other societies to secure mutual coöperation upon the programme, place and time of meetings, with this end in view.

A report of a most successful character was presented by Dr. Klotz from the committee on the organization of a supply of square glass museum jars for the continent of America. Through the efforts of this committee, arrangements had been made with a Pittsburgh firm to manufacture these jars in ten standard sizes and a sample jar had been submitted by this firm of a satisfactory character, to be supplied at "duty free" prices to members of the Museums Association and scientific institutions, provided a sufficient number of orders were received before a given date. A circular letter to this effect, stating sizes, with prices, had been sent to all the members of the association and a sample jar submitted to a number of the largest institutions represented, and orders amounting to some $1,300 had already been received by the secretary.

In the discussion that followed upon this report, much praise

was given to the success that had attended the action of the committee. The sample jar manufactured was pronounced quite as good and in some repects better than those which had been produced by the German firms and the prices offered were no higher. It was felt that the solution of a difficult problem had been practially reached, and a hearty vote of thanks was passed to the committee, and especially to Dr. Klotz, for the work accomplished in this connexion.

The necessity of obtaining increased orders, to meet the amount required by the firm before manufacture could be undertaken, was pointed out, and to this end it was recommended that this subject be brought before the American Museums Association and other leading scientific institutions, outside of the Medical Museums Association. It was decided that the transaction should remain between the Museums Associations and the manufacturing firm undertaking the work and that a commercial intermediary was not wanted for the present, and the secretary was instructed to send an announcement to the *Journal of the American Medical Association* inviting orders for square glass museum jars and offering to send statement of terms and a sample jar on request to intending buyers.

An interesting programme, published below, upon museum and laboratory technique, microscopic technique, museum teaching and presentation of results of medical research was presented. The exhibition of the association which was held in the Banquet Hall of the Academy of Medicine, remained open for three days for the benefit of the members of the Association of Pathologists and Bacteriologists and was largely attended.

PROGRAMME

Museum and Laboratory Technique

1. On the making of glass frames for mounting specimens in their correct anatomical relations, in square glass museum jars.—Mr. E. L. Judah, Montreal.

2. Elaterite as a seal for musuem jars.—Dr. J. J. Mackenzie, Toronto.

3. Use of celloidin for museum jars and Laboratory purposes. —Mr. Carl Kellner, Yale.

4. Methods of mounting animal parasites in solutions, including the use of plaster paris.—Dr. Fred. W. Weidman, Philadelphia.

5. Note on a modified sugar solution as a final preservative for

museum specimens (with exhibit of 12 specimens.)—Mr. E. B. Ellis, Hôpital Francais, New York.

6. Typewriting labels on museum jars.—Dr. C. V. Silvester, Princeton.

7. Some practical devices in the laboratory.—Dr. S. R. Haythorn, Pittsburgh.

8. Technique of obtaining samples of alveolar air with special reference to the Roth modification of the Plesch-Higgins method.—Dr. Maude E. Abbott, Montreal.

Presentation of Results of Medical Research

9. Anthracosis associated with chronic tuberculosis.—Dr. O. Klotz, Pittsburgh.

10. Anthracosis associated with unresolved pneumonia.—Dr. S. R. Haythorn, Pittsburgh.

11. On the methods of organ reconstruction by injection of the arterial tree (with exhibit).—Dr. Louis Gross, Montreal. Discussed by Dr. M. C. Winternitz, Baltimore.

12. Syphilitic aneurysm of pulmonary artery with demonstration of the specimen.—Dr. A. S. Warthin, Ann Arbor.

13. Mesarteritis of pulmonary artery.—Drs. M. C. Winternitz and H. C. Schmeisser.

14. The persistence of cranial bone rudiments in complete acrania.—Dr. Carl Weller, Ann Arbor.

15. Uterus septus.—Drs. G. W. Phelan and Ralph Beech, Long Island College Hospital, Brooklyn, N.Y.

16. Incomplete transposition of vessels in a girl of sixteen.—Dr. J. W. McMeans, Pittsburgh.

Microscopic Technique

17. Note on an American substitute for Russian paraffine.—Dr. A. S. Warthin, Ann Arbor.

Museum Teaching

18. Souchon Museum of Normal Anatomy.—Dr. E. Souchon, New Orleans.

Special Exhibits

19. Series showing (a) ossific centres by Schultz method, and (b) primary and secondary dentition by Spalteholtz Method.—Mr. Wm. Muir, McGill University, Montreal.

20. Series from the McGill Medical Museum and Royal Victoria Hospital, Drs. Horst Oertel, Maude Abbott and J. Kaufmann, and Mr. E. L. Judah.

21. Arteries of head and chest prepared by Souchon paint method.—Dr. E. Souchon, New Orleans.

MANITOBA MEDICAL ASSOCIATION

THE annual meeting of the Manitoba Medical Association took place at Winnipeg on Thursday and Friday, February 8th and 9th, in conjunction with the annual meeting of the Winnipeg Medical Society. The meeting, which was well attended, was largely clinical in character and a number of interesting cases were presented. The presidential address was delivered by Dr. James McKenty of Winnipeg. Two papers by Dr. Frank Smithers, chief of the medical department of Augustana Hospital, Chicago, were of particular interest, the subjects being, "Modern conceptions in the diagnosis and treatment of pernicious anæmia," and "Diagnosis and treatment of gastric ulcer according to recently established clinical and laboratory facts." Other interesting papers were read by Dr. E. S. Bolton, of Brandon, on "Measles: the prevention of epidemics"; by Dr. J. A. Gorrell on "Hernia"; and by Drs. E. J. Washington and C. Robinson.

HALIFAX MEDICAL SOCIETY

THE Halifax Medical Society held its fifth sessional meeting on March 14th, in the Institute of Pathology at the Victoria General Hospital. The president, Professor Fraser Harris, occupied the chair. Professor A. G. Nicholls, of the Chair of Pathology and Bacteriology, Dalhousie University, gave an interesting and instructive address on certain specimens illustrative of monsters. The specimens were all taken from the museum of the Department of Pathology. Several rare conditions were exhibited.

The sixth meeting of the Society was held on April 17th, in the rooms of the recently opened medical library of Dalhousie University. Professor Cameron, of the Chair of Anatomy, was in the chair. The chief communication was by Dr. J. G. Macdougall; it consisted in a survey of ten very instructive cases of surgical disease of the kidney. The Society received a report from the executive committee which had had an interview with representatives of the provincial government on the subject of the non-remuneration of medical services under the Workmen's Compensation Act. The executive committee also reported on having received a deputation from the Society of Registered Nurses of Nova Scotia relative to a register of unqualified nurses being kept quite distinct from that of nurses duly qualified.

Medical Societies

CANADIAN MEDICAL ASSOCIATION:—President—Dr. Murray MacLaren, C.M.G., St. John, N.B. President-elect—Dr. A. D. Blackader, Montreal. Secretary-treasurer—Dr. J. W. Scane, 836 University Street, Montreal.

ACADEMY OF MEDICINE, TORONTO:—President—Dr. Herbert Bruce. Secretary—Dr. J. H. Elliot, 11 Spadina Road. Treasurer—Dr. W. A. Young.

ALBERTA MEDICAL ASSOCIATION:—President—Dr. W. A. Lincoln, Calgary. Secretary-treasurer—Dr. D. G. Revell, University of Alberta, Edmonton South. Annual Meeting, Calgary, 1917.

ASSOCIATION OF MEDICAL OFFICERS OF THE MILITIA:—President—Lt.-Colonel A. T. Shillington, A.M.C., Ottawa. Secretary—Captain T. H. Leggett, A.M.C., Ottawa.

ASSOCIATION OF MEDICAL OFFICERS OF NOVA SCOTIA—President—Dr. George E. DeWitt, Wolfville. Secretary—Dr. W. W. Hattie, Halifax.

BRANT COUNTY MEDICAL SOCIETY:—President—Dr. E. R. Secord, Brantford. Secretary—Dr. M. N. Faris.

BRITISH COLUMBIA MEDICAL ASSOCIATION:—President—Dr. J. Glen Campbell, Vancouver. Secretary—Dr. H. W. Rigga, Vancouver.

CALGARY MEDICAL SOCIETY:—President—Dr. J. L. Allen. Secretary—Dr. J. E. Aikenhead. Treasurer—Dr. W. Shipley.

CANADIAN ASSOCIATION FOR THE PREVENTION OF TUBERCULOSIS:—President—Hon. J. W. Daniel, M.D., St. John Secretary—Dr. George D. Porter, Ottawa.

CANADIAN HOSPITAL ASSOCIATION:—President—Dr. H. A. Boyce, Belleville. Secretary—Dr. J. N. E. Brown, Toronto.

CANADIAN PUBLIC HEALTH ASSOCIATION:—President—Dr. J. D. Pagé, Quebec. Secretary—Dr. J. G. Fitzgerald, University of Toronto. Annual meeting, Ottawa, 1917.

CENTRAL SOUTHERN ALBERTA MEDICAL SOCIETY:—President—Dr. J. S. Murray, Okotoks. Secretary-treasurer—Dr. G. E. Learmonth, High River.

COLCHESTER-HANTS MEDICAL SOCIETY:—President—Dr. J. W. T. Patton, Truro. Secretary—Dr. H. V. Kent, Truro.

EDMONTON ACADEMY OF MEDICINE:—President—Dr. C. U. Holmes. Secretary-treasurer—Dr. E. L. Garner. Library, 12 Credit Foncier, Building.

ELGIN COUNTY MEDICAL ASSOCIATION:—President—Dr. G. A. Shannon, St. Thomas. Secretary-treasurer—Dr. W. F. Cornett, St. Thomas.

FRASER VALLEY MEDICAL SOCIETY:—President—Dr. DeWolfe Smith. Secretary—Dr. D. F. Carswell.

HALDIMAND COUNTY MEDICAL ASSOCIATION:—President—Dr. Hopkins Dunnville. Secretary—Dr. Courley, Cayuga, Ont.

HALIFAX MEDICAL ASSOCIATION:—President—Dr. D. Fraser Harris. Secretary—Dr. Hugh Schwartz.